VOLUME I

THE HANDBOOK OF SOCIAL PSYCHOLOGY

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MOTIVATION

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In his chapter on major developments in social psychology for the third edition of the *Handbook of Social Psychology,* Jones (1985) discussed the waxing and waning of research interests. As he and others have noted, motivational analyses were definitely on the wane in the 1970s and 80s, beginning with the advent of attribution theories in the late 1960s and continuing with the subsequent growth of interest in the application of cognitive theories and paradigms to questions about social cognition. Consistent with this observation, if only symbolically, chapters on social motivation were part of the first and second editions of the *Handbook of Social Psychology* (Murphy, 1954; Berkowitz, 1969), but the third edition (1985) did not contain a chapter explicitly focused on motivation. Of course motivational research did not stop in 1969, but there has been a strong resurgence of interest in motivational thinking in the last decade; many of the new issues and approaches covered in this chapter have been introduced since my last contribution to a selective review of research on motivation in social psychology (Pittman & Heller, 1987). Motivational theories of the underpinnings of cognitive analysis and the construction of reality, the control and meaning of behavior, and of the functioning of self and coping with the knowledge of the end of self are currently generating insight, controversy, interest, and an increasing amount of research. Motivation is back.

It would not be feasible to cover everything motivational that has happened since 1969 in one chapter. In its broadest sense, motivation is part of a great many analyses, and even alluding to every project with a motivational aspect would not be possible here. But there are a more limited number of research projects in which the motivational assumptions that are made refer to broad or basic motives, more fundamental to the nature of human desire than particular specific motives that are the result of relatively unique or specific current conditions. These projects are the primary subject of this chapter.

THE NATURE OF MOTIVATIONAL APPROACHES

What is a motivational approach? An informal survey of general texts on motivation revealed no single agreed-upon definition. However, Young's (1961) specification of the roles of energizing and directing behavior (p. 24) is representative and serviceable for social psychological analyses if "behavior" includes the processing of information and the development of cognitive structures as well as more overt actions. Motivation, the activation of internal desires, needs, and concerns, energizes behavior and sends the organism in a particular direction aimed at satisfaction of the motivational issues that gave rise to the increased energy. However, one of the things that social psychologists quickly discovered about human motivation is that the connections between the energizing and direction functions are not always simple and straightforward (e.g., Schachter & Singer, 1962).

Focusing on motivation implies a particular preference for answers to scientific questions on the part of the researcher or theorist. All basic research is after the answers to *why* questions, but there are individual differences among social psychologists in the kinds of answers that seem to be interesting or satisfying. When trying to answer the question "Why did that behavior occur?" some find interest and satisfaction in an answer that specifies aspects of the stimulus field, or in an explanation of the nature of reinforcement contingencies, while others might prefer answers couched in terms of the organism's developmental history. Some look for regularities that will apply to all, while others prefer to concentrate on the things that make each of us different. Perhaps an answer that specifies only cognitive processes will strike some as entirely satisfactory.

Motivationally oriented psychologists like to look inside the person for desires: what is wanted, what is strived for, what will feel satisfying or unsatisfying to the actor? A basic characteristic of motivational analyses is the assumption that one salient feature of behavior in situations is that the person is an active participant, an originating striving source with needs, desires, hopes, and fears, and not simply a wet computer through which information enters, is processed, and is emitted as behavior. If a computer analogy must be used, then for one interested in motivation it has to be a motivated computer, a computer with an attitude, with a heart as well as a mind.

The kind of answer to a "why" question that one will take as satisfactory at any given time is a combination of scientific tactical decisions and personal preferences. The waxing and waning of interest, now in motivation, now in cognition, is a natural and good aspect of scientific cycles of concentration. There is no doubt that the recent focus on social cognition has greatly increased our knowledge of cognitive processes, and as motivational analyses begin their return perhaps the time is ripe for a fruitful new integration of these two approaches that have of course always been intertwined in social psychological theory.

Organizational Plan

This review is divided into three general areas: the construction of understanding, acting on and in the world, and coming to terms with self and the end of self. These distinctions are of course somewhat arbitrary and overlapping, but they capture much of the current motivational thinking in social psychology. The largest area of research, consonant with the recent focus on cognition, has been concerned with how motivation affects the *construction of understanding,* or mental representations of reality. Issues of accuracy and illusion are covered in this section. Another substantial part of this review focuses on how motivation affects overt action, or *acting on and in the world.* The general areas of research reviewed in this section include

work on intrinsic and extrinsic motivational orientations, and on issues of motivational arousal, effort expenditure, and task persistence. The final, and less extensive, section contains a selective review of motivational thinking in the research on *coming to terms with self and the end of self.*

Several topics that could have been included in this review are the subject of other chapters in this handbook and are covered lightly or not at all here. These topics include altruism (see Batson, 1998, in this *Handbook*), aggression (see Geen, 1998, in this *Handbook*), emotion (see Zajonc, 1998, in this *Handbook*), evolution (see Buss & Kenrick, 1998, in this *Handbook*), and the issue of self-regulation (see Wegner & Bargh, 1998, in this *Handbook*, and Baumeister, 1998, in this *Handbook*). Because of its centrality to a number of recent motivational theories, some aspects of the research of the self are covered, but for a more complete review see the chapter on the self (Baumeister, 1998, in this *Handbook*).

THE CONSTRUCTION OF UNDERSTANDING

One fundamental problem, an unavoidable project that presents itself to the unformed person and that remains an ongoing issue throughout life, is the task of making sense out of and acting in a world that is extremely complex and at best only partly open to understanding and influence. Creating useful and coherent mental representations of this environment is clearly a major aspect of development and functioning. In trying to understand how people proceed with this life-long activity of creating abstract systems for understanding and action, most current social psychological theories frame their assumptions from a stance that views the person as an active, generative source in interaction with external influences.[1] The task of making sense and operating effectively is embraced with gusto. The construction of interesting and even entertaining explanations can be satisfying in its own right and gives pleasure when things are working well—when the environment seems understandable and open to influence. However, it is also clear that things do not always hold together; inconsistencies arise, plans fail, expectations can be disconfirmed, and desired outcomes may not be attained or may be attained in ways that seem unpredictable and capricious. Sometimes the world seems to hang together just as expected, but sometimes it reveals a capricious and viciously chaotic aspect that is seriously troubling. Much of the recent work on motivation in social psychology addresses these twin issues of the construction of understanding, and dealing with an unresponsive, confusing, and sometimes frightening and hostile environment.

Because one clear goal is to generate accurate representations that can be used for effective prediction and explanation of events, and for making good action decisions designed to influence events and to achieve desired out-

comes, much of the recent work on motivation has been directed toward understanding when and why accuracy motives are engaged. However, at other times the goal may be to construct and maintain favored or comforting conceptions of reality. When human desires enter to alter or bias the kinds of inferences, predictions, and explanations that are made, our understandings may be more illusory than accurate. This is the other main focus of work on motivation and making sense of the world, targeted on understanding the interplay between accuracy and illusion. Therefore, this section on the construction of understanding first considers research targeted on accuracy, and then reviews research targeted on illusion.

Accuracy

Why do people construct explanatory systems? That such explanatory systems are constructed is obvious, but why are they constructed? What do people hope to gain by developing these systems of understanding, what purpose do they serve? The answer seems obvious: without such systems of understanding there would be little hope of continuing to exist. For example, one has to learn what qualifies as food, where it is, and how to get it, or starvation will ensue. In the social realm, things are more complex, but still one needs to learn at least some of the rudiments of effective social interaction to get a job, attract a companion, or be invited to the next party.

From a motivational perspective, the key is to understand that making sense of reality doesn't happen automatically. It takes an energized and directed person to go out and explore, to seek, to make, to plan, to reflect, to err and learn from errors, and to generate, test, and revise hypotheses. But these activities are neither constant nor random. The motivational question is what gets these thoughts and actions going? When and why does desire energize and direct the active construction of reality?

In the realm of social understanding, much of the research on explanatory systems has been guided or informed by theories of attribution (see Gilbert, 1998, in this *Handbook*). Attribution theorists have assumed that inferences and attributions about the social world are made in the service of rendering that world predictable and, to some degree, potentially controllable (Jones & Davis, 1965; Kelley, 1967, 1971). This motive to render the world predictable and controllable is assumed to be a fundamental aspect of human nature, a basic motive that waxes and wanes but that is the underpinning of our attempts to make sense of things. If the world remained incomprehensible and unpredictable, sensible actions could not be taken, and indeed learning could not occur since learning is in essence discovering regularities in the environment. The desire to render order and sense out of chaos can be assumed to be a fundamental human motive, one that leads to pleasure and

confidence when satisfied and that leads to anxiety and confusion when thwarted (see Weary, Gleicher, & Marsh, 1993, for a variety of perspectives on this viewpoint).

Motivations related to control concerns have long been recognized. The desire to exert control over one's environment was a central theme in White's (1959) analysis of effectance, and the experience of competence and self-determination became a central part of theories of intrinsic motivation (e.g., Csikzenmihalyi, 1975; deCharmes, 1968; Deci, 1975; Deci & Ryan, 1985). Evidence that deprivation of the ability to control outcomes can have negative consequences was perhaps best represented by the research on learned helplessness (e.g., Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978; Seligman, 1975). In a different vein, research inspired by reactance theory (Brehm, 1966; S. Brehm & Brehm, 1981; Wicklund, 1974) suggested that when a specific behavioral freedom is threatened, that freedom becomes more attractive and attempts to reassert the freedom are initiated (see Brehm, 1993, for a discussion of reactance and control).

An early approach to the question of when attributional activity was likely to occur varied characteristics of the stimuli that were presented, characteristics that could be expected to differ in the extent to which they would incite effortful information processing. Findings indicating that some informational characteristics—such as unexpectedness or expectancy violation (e.g. Bargh & Thein, 1985; Clary & Tesser, 1983; Hastie, 1984; Hilton, Klein, & von Hippel, 1991; Lau & Russell, 1980; Pyszczynski & Greenberg, 1981; White & Carlston, 1983; Wong & Weiner, 1981) or unusual degrees of negativity (e.g., Harvey, Yarkin, Lightner, & Town, 1980; Wong & Weiner, 1981)—lead to increased information processing can now be understood from the perspective of a control motivation analysis. These informational characteristics are likely to act as cues that activate control motivation and accuracy concerns because they imply rather directly that something not yet understood or potentially threatening has transpired.

I will review several ways that an increase or decrease in the motivation to develop an accurate understanding has been varied more directly in recent research. One approach is to compare subjects who already differ in their current generalized concern with achieving an accurate conceptualization. This has been done either through a manipulated prior experience designed to enhance control motivation, or by utilizing naturally occurring individual differences in depression that are thought to have arisen at least in part due to experiences with lack of control. A second general approach involves placing subjects into situations that vary systematically in the extent to which they are likely to arouse control concerns, including variations in expectations of future interaction, outcome dependency, accountability for judgments, or the importance of judgments.

Changes in accuracy motivation have been measured in

several ways as well. Increased interest in and utilization of available information, the nature and complexity of inferences that are drawn from available information, and the amount of effort and time devoted to information analysis have all been measured. In other studies, interest in obtaining information about interaction partners, and sensitivity to such information, has been the focus. Another measure of interest has been in the effects of changes in accuracy motivation on errors and biases that frequently occur.

The effects of accuracy motivation have been studied directly in experiments in which attempts to be accurate have been varied by instruction, that is, the experimenter tells some of the subjects to form accurate impressions or judgments while giving different instructions to other subjects. Neuberg and Fiske (1987) found that explicit accuracy instructions (Experiment 3) led subjects to base their impressions on the actual information given rather than on category-based expectations. Neuberg (1989) gave subjects who were acting as interviewers either a negative expectancy or no expectancy, and either instructions to form an accurate impression or no such instructions. He found that the accuracy instructions counteracted the typical effects of a negative expectation. Accuracy instruction subjects formed less negative impressions of the target in the negative expectancy conditions and, generally, behaved in ways unlikely to elicit self-fulfilling prophecies from interviewees. Thompson, Roman, Moskowitz, Chaiken, and Bargh (1994) have shown that explicit accuracy instructions have the effect of attenuating the usual effects of covert priming of traits on impression formation, indicating that when accuracy motivation is increased, judgments become less susceptible to bias, even bias tendencies that occur without the subject's awareness (see also Pittman, 1992, for a discussion of related issues). Ford and Kruglanski (1995) also showed that accuracy instructions resulted in a decreased influence for primed traits when forming impressions, and in a second study showed that subjects chronically low in need for closure exhibited similar effects. There is ample evidence concerning the effects of direct instructions to be accurate, and in the research reviewed next these same sorts of dependent measures have been used to detect changes in accuracy concerns.

Differences in Prior Motivational State

Deprivation of Control   The proposal that control motivation underlies attributional analysis has been tested by varying the nature of a prior experience with deprivation of control, and then looking for heightened attributional activity in subsequent unrelated settings. If the motivation to render the social environment predictable and potentially controllable is the fundamental reason for engaging in attributional analysis, then deprivation of control in one setting should lead to an increased general level of control

motivation and therefore more effortful and careful attributional processing in the next setting. To test this prediction, Pittman and N. Pittman (1980) first gave subjects one of three different levels of control deprivation (high, moderate, or none; see N. Pittman & Pittman, 1979), and then a second experimenter in an ostensibly unrelated second experiment provided subjects with attributional materials containing an attribution-relevant informational variation that had already been shown to be sensitive to changes in level of motivation (Pittman, Scherrer, & Wright, 1977). As predicted, subjects did show increased utilization of the available information when responding to a variety of questions concerning the motivation and underlying attitudes of the communicator portrayed in the stimulus materials in the second part of the experiment. This result has been replicated using the same manipulations and materials (Liu & Steele, 1986), and also conceptually replicated by Burger and Hemans (1988) using a closely related individual difference variable—desire for control (Burger & Cooper, 1979).

Pittman and D'Agostino (1985, 1989) reported a further series of studies in which control-deprived subjects were found to be more likely to make and carefully store inferences from textual materials, and that this effect was due to differences in on-line as opposed to memory-based processing. Other studies found control-deprived subjects more willing to exert effort to obtain information (D'Agostino & Pittman, 1982), and more interested in and sensitive to diagnostic information about an interaction partner (Swann, Stephenson, & Pittman, 1981).

Pittman and D'Agostino (1985, 1989) argued that an experience with control deprivation (in a setting in which control was expected and desired) calls into question the general adequacy of one's understanding of the way things work, leading to a change in the mode of information processing likely to be employed. In an effort to ensure that controllability is reestablished, the person now processes new information in a careful and deliberate fashion (which could be described as bottom-up, data driven, or systematic) designed to generate accurate analyses that will be more likely to lead to understanding and control.

One implication of this analysis is that recently control-deprived subjects, because of the increased care and effort they will put into the construction of representations of new situations, may sometimes prove to be more accurate in their judgments and inferences and less likely to show errors or biases in situations where increased care and effort would be likely to lead to increased accuracy. This prediction was tested using the correspondence bias paradigm (Gilbert, 1998, in this *Handbook;* Jones, 1979; Jones & Harris, 1967). Correspondence bias refers to the "tendency to assume that a given action can be explained by reference to a correspondent disposition when actually people with a variety of different dispositions would have behaved in a

similar way" (Jones, 1986, p. 44). In the attitude attribution paradigm (Jones & Harris, 1967), correspondence bias is evident when subjects assume that communicators believe what they say even when the communicators were given no choice about what position they would take in their speeches or essays.

Pittman, Quattrone, and Jones (1985; see also Pittman, 1993) predicted that control-deprived subjects would be less likely to show correspondence bias in this paradigm, particularly at higher levels of inferential generality (Cantor, Pittman, & Jones, 1982; Gilbert & Jones, 1986; Gilbert, Jones, and Pelham, 1987), because of the greater effort they would put into an attempt to construct an accurate representation. Given the underlying two-step correction process that has been identified as a major source of this bias (i.e., making the person attribution and then correcting for situational constraints) and the role that effort might play in the correction step (Gilbert, 1989; Gilbert, Pelham, & Krull, 1988; Quattrone, 1982; Trope, 1986a), the correspondence bias seemed a likely candidate for yielding to increased accuracy motivation. The results of the Pittman, Quattrone, and Jones study did show that control-deprived subjects were less likely to show the correspondence bias, particularly at higher levels of inferential generality.

The increased care in processing information by control-deprived subjects was also demonstrated in an attitude change paradigm. Using materials developed by Maheswaran and Chaiken (1991), Pittman (1993) found that control-deprived subjects were more likely than baseline subjects to rely on systematic rather than heuristic information processing (Chaiken, 1980) when forming their attitudes. A similar finding was obtained by Pittman and Worth (1990) using the Desire for Control scale developed by Burger and Cooper (1979) to identify persons high and low in chronic desire for control.

Depression and Control Motivation   There are close parallels between the effects of experimentally induced control deprivation and naturally occurring mild to moderate depression on social information processing. Beck's (1967, 1974) model of depression and several versions of learned helplessness theory (Abramson, Metalsky, & Alloy, 1989; Abramson, Seligman, & Teasdale, 1978; Seligman, 1975) both assume that experience with inability to control one's environment is a precursor to depression. In these formulations a person's beliefs and expectations about uncontrollability are important mediators of depressive reactions. Weary, Marsh, Gleicher, & Edwards (1993) argued that experiences with lack of control lead to uncertainty about the true nature of the social environment. Such uncertainty can in turn lead to the kinds of careful and effortful processing that has been shown to result from laboratory manipulations of control deprivation, and to symptoms of mild to moderate depression.

There are several lines of converging evidence in support of this view. Experimental exposure to high levels of temporary control deprivation has been shown to produce the symptoms associated with depression (Burger & Arkin, 1980; Pittman & N. Pittman, 1980), suggesting at least a short-term link. In longitudinal studies expectations of uncontrollability have been shown to predict subsequent depression (Brown & Siegel, 1988; Lewinsohn, Hoberman, & Rosenbaum, 1988; Lewinsohn, Steinmetz, Larson, & Franklin, 1981; Pagel, Becker, & Coppel, 1985). In a different area of inquiry, studies of the overt task performance of moderately helpless subjects show that their performance declines only when the tasks are seen as having the potential for further loss of control (Pittman & D'Agostino, 1989; Snyder, Stephan, & Rosenfield, 1978). When the tasks are relatively simple and have no clear criteria for correct or incorrect judgments, or are otherwise not taken as diagnostic of underlying ability, then deprivation of control leads to improved performance (see the section on Illusion for an explanation of these findings). Putting these lines of evidence together, Weary et al. (1993) argued that because social judgment tasks are indeed ones in which there is no objective standard of correct or incorrect inference and impressions, and because depression is associated with feelings of lack of control and uncertainty, moderately depressed subjects should also show enhanced performance on social judgment tasks in the form of more careful and effortful processing of available information.

Several studies show that mild to moderate depression has effects on information processing similar to those found in studies in which prior control deprivation was manipulated. McCaul (1983) found that depressed subjects were more sensitive to information regarding the causes of another's behavior than nondepressed subjects—mirroring with the same attribution materials Pittman and N. Pittman's (1980) findings with manipulated deprivation of control. Marsh and Weary (1989) found that depressed subjects had higher attributional complexity scores than nondepressed subjects, and Flett, Pliner, and Blankstein (1989) found a similar relationship. Gleicher and Weary (1991) also showed that depressed subjects engage in more attributional activity than nondepressed subjects. Edwards and Weary (1993) found that depressed observers used individually-based information more than nondepressed subjects even when they had categorical information available, a result similar to the findings in research on outcome dependency (see the discussion below).

In the realm of information processing in the context of social interaction, Hildebrand-Saints and Weary (1989) found that depressed subjects showed the same increased interest in diagnostic information about an interaction partner as did control-deprived subjects in the Swann, Stephenson, and Pittman (1981) study. In a setting in which social

information processing was measured, Weary, Jordan, and Hill (1985) found that depressed subjects were more sensitive to another's violation of a social norm, and similar findings were obtained by Marsh and Weary (1994). These findings of increased interest in information about others are complemented by Coyne, Aldwin, and Lazarus' (1981) finding that mildly depressed subjects were more interested in obtaining social comparison information following negative feedback than were nondepressed subjects.

Finally, Yost and Weary (1996) showed that depressed subjects were less likely to show the correspondence bias, a finding parallel to that of Pittman, Quattrone, and Jones (1985). In addition, Yost and Weary demonstrated that this effect was eliminated when a cognitive load was added, indicating that depressed subjects were indeed reducing the correspondence bias by relying on capacity-dependent additional information processing.

Despite some evidence to the contrary (e.g., Sullivan & Conway, 1989), the bulk of the research shows that mild to moderate depression leads to increased cognitive activity in the service of accuracy. Whether these same effects would be obtained with more severely depressed populations is still an open issue.

Manipulations of Situational Characteristics   Another approach to the study of motivational influences on the construction of understanding has been to vary some feature of the situation that could be expected to engage motivational concerns about the accuracy of inferences.

Expectation of Future Interaction   Early evidence for the efficacy of this approach was provided by Berscheid, Graziano, Monson, and Dermer (1976), who showed that when subjects expected to interact with (i.e., date) another person they paid more attention to that person's characteristics than when they had no such expectation. Monson, Keel, Stephens, and Genung (1982) also found that expectation of future interaction led to more elaborate and extreme attributions about the target. Feldman and Ruble (1988) found a compatible result in a study investigating whether young children would be more likely to use psychological terms in their descriptions of others if their motivation to understand others was increased through expectation of future interaction. Children ages five to six and nine to ten were shown videotapes of target children with whom they either did or did not expect to interact. For both age ranges, expectation of future interaction increased the use of central or psychological traits as opposed to peripheral or merely descriptive statements in the free descriptions the subjects gave of videotaped targets.

The expectation of interaction with another person raises the possibility that the partner's behavior will be important to interpret in order to understand and influence the coming interaction and its outcomes. So it makes sense that

attentional and cognitive resources would be mustered in an attempt to develop an accurate understanding on which to base the interaction. This interpretation has been given a more direct test in the studies on outcome dependency.

Outcome Dependency   Not only the fact of an anticipated interaction, but the nature of that interaction would be expected to affect the extent to which a person would be motivated to attempt to develop an accurate impression. In the research on outcome dependency, the extent to which one is dependent on an interaction partner for important outcomes has been varied to see if this variable moderates the extent of motivational arousal and the subsequent nature of social information processing (see Fiske, 1998, in this *Handbook*).

Fiske and Neuberg (1990) made a distinction between category-based and individuating or attribute-based methods of forming impressions. This distinction refers to the likelihood of using pre-existing structures such as stereotypes (heuristic or peripheral processing, top-down or theory-driven processing) versus constructing an impression from the raw data that is available about the target person (systematic or central processing, bottom-up or data-driven processing). Based on the evidence provided by the research on the effects of control deprivation on similar changes in information processing strategy, Fiske and Neuberg (1990) argued that outcome dependency typically motivates the person to construct impressions in a careful and deliberate fashion, relying less on stereotypes and more on individuating information, so as to have an accurate impression upon which to base control-relevant interaction decisions.

Neuberg and Fiske (1987) tested this prediction in several experiments in which subjects were or were not anticipating being dependent on another for a $20 prize. Information about the other was provided, including information that normally activates a stereotype and leads to category-based impression formation, as well as individuating information that by itself would lead to a different impression. The results across these studies indicated that subjects were more likely to engage in attribute-based processing and less likely to show the effects of category-based processing when they were outcome dependent on the other. These effects appear to be mediated by an increased concern with accuracy in the outcome-dependent conditions.

Erber and Fiske (1984) created outcome dependency and an expectation of competence, and then provided some subjects with information that was inconsistent with the expectation. They found that outcome-dependent subjects paid more attention to inconsistent information, and thought more about it, than did non-outcome-dependent subjects. With consistent information there were no such differences in attention and processing, suggesting that

outcome-dependent subjects are particularly vigilant for information that suggests an expectation may be erroneous. This finding fits with the earlier research on expectation violation that found increased attention and deeper processing when information was unexpected (Clary & Tesser, 1983; Hastie, 1984; Pyszczynski & Greenberg, 1981; Wong & Weiner, 1981), and shows that this effect is related to or at least modulated by differences in situationally induced control motivation. Darley, Fleming, Hilton, and Swann (1988) also showed that when perceivers were dependent on each other, they sought more individuating information from their interaction partners.

These findings, when coordinated with the Neuberg and Fiske (1987) findings on time spent considering information about an interaction partner (time spent increases when outcome dependent—studies 1 and 2) and the parallel effects of accuracy instructions (study 3), and the Swann, Stephenson, and Pittman (1981) and the Hildebrand-Saints and Weary (1989) findings of increased interest in diagnostic information about an interaction partner due to prior deprivation of control or to depression, clearly suggest a [control motivation] → [interest in accuracy] → [change in information processing strategy] causal chain.

Fiske and her colleagues (Depret & Fiske, 1993; Fiske, 1993; Fiske, Morling, & Stevens, 1996) have extended the control motivation analysis to considerations of the effects of asymmetrical outcome dependency, or social power. Fiske (1993) proposed that the relatively powerless are likely to engage in the kind of careful and effortful processing of information about the relatively powerful which has been shown in the many studies on control deprivation and outcome dependence, but that the relatively powerful will not (because they do not need or care less to) expend such effort in forming impressions of the relatively powerless (see Depret & Fiske, 1993, and Fiske, Morling, & Stevens, 1996, for reviews of findings consistent with this analysis).

Personal Accountability Another approach to situationally induced motivation has relied on making subjects accountable in some way for the conclusions or inferences they draw from a specified set of information. Similar to the effect of outcome dependency, this should create a concern with accuracy assuming that the subjects want their accounts to be judged reasonable. In fact this can be considered to be a different kind of outcome dependency, one in which the target of the inferences and the person on whom one is outcome dependent are separated.

With attitudes as the subject of information processing, Tetlock (1983a) found that when subjects were accountable, that is, they expected to have to justify their attitudinal positions to another person, their thoughts became more complex and less one-sided, particularly when the personal attitude of the person to whom the position would have to be justified was unknown. In the realm of impression formation, Tetlock and Kim (1987) varied whether subjects were told they would have to account for their personality inferences and predictions either before processing the available target personality information, after processing that information, or not at all. Consistent with the findings of Pittman and D'Agostino (1989), Tetlock and Kim found that more complex and accurate predictions were generated only when the accountability information was given before the information about the target was processed, indicating that the effect of accountability occurs as information is considered, as it does in the case of prior control deprivation. Weldon and Gargano (1988) also found that accountability reduced the usual effect of social loafing (Latané, Williams, & Harkins, 1979); on a task on which social loafing normally leads to less complex judgment strategies, accountability ameliorated the effect.

As with other sources of accuracy motivation, accountability has been shown to reduce the likelihood of primacy effects (Tetlock, 1983b) and correspondence bias (Tetlock, 1985). However, accountability does not *always* lead to more accurate judgments, because sometimes the willingness of accountable subjects to expend energy processing the available information and to generate more cognitively complex representations can lead to less optimum judgments. Tetlock and Boettger (1989) found that accountable subjects were more susceptible to the dilution effect (moderation of inferences caused by the addition of nondiagnostic information), presumably due to their willingness to try to use all the available information (also see Pelham & Neter, 1995). This is an important qualification to the general finding that increased accuracy motivation leads to more accurate inferences. Such improvements in accuracy will only be the case for those judgment tasks on which more careful and effortful processing is likely to increase the accuracy of judgments (see Pittman & D'Agostino, 1985).

Importance of the Task Another way of inducing an accuracy set is to make the task seem important in some way, presumably motivating the person to come up with the best or most accurate judgment. Kassin and Hochreich (1977) found that when subjects were told that the task was important either because it was a reflection of social intelligence, or because it was important to the experimenter's doctoral research, subjects made more complex use of attribution-relevant information. Kruglanski and Freund (1983) manipulated "fear of invalidity" with instructions emphasizing the importance of the accuracy of the decision, as well as need for structure with a time deadline. They found that importance decreased the biasing effects of primacy, stereotyping, and numerical anchoring. Freund, Kruglanski, and Shpitzajzen (1985) also replicated the reduction of primacy effects using two different manipulations of the importance of forming an accurate impression.

Individual Difference Measures   There are a number of individual difference measures that have been developed to assess chronic preferences for engaging or not engaging in the kind of effortful and careful cognitive processing that is characteristic of control-oriented persons. These measures include: desire for control (Burger & Cooper, 1979; see Burger, 1993), which measures chronic desire for control; need for closure, which measures an individual's desire to attain or avoid closure on cognitive tasks (Webster & Kruglanski, 1994; see Kruglanski & Webster, 1996); personal need for structure, which measures chronic desire for simple cognitive structures (Neuberg & Newsome, 1993; see Moskowitz, 1993); need for cognition, which measures an individual's tendency to engage in and enjoy effortful cognitive activity (Cacioppo & Petty, 1982; see D'Agostino & Fincher-Kiefer, 1992); uncertainty orientation (Sorrentino & Short, 1986; see Driscoll, Hamilton, & Sorrentino, 1991), which measures individual differences in the tendency to approach and attend to, or avoid and ignore, uncertainty; and tolerance for ambiguity (Norton, 1974; see Andersen & Schwartz, 1992), which measures a person's tolerance or intolerance for ambiguous information and settings.

In each case, there is evidence that persons varying along these dimensions show the expected differences in cognitive activity and final conclusions that would be expected given the body of research reviewed here, and some of that evidence has already been reviewed. These measures clearly have at least some overlap, and the variety of supporting data certainly indicates similar effects on attention to and processing of information, but although a full review and comparison is no doubt in order, it is not within the scope of this chapter.

Summary   Taken together, the research on the effects of control deprivation and on the effects of mild to moderate depression establish fairly clearly that when experiences with lack of control undermine the sense that the world is understandable, the response is often to make attempts to develop more accurate conceptions in subsequent settings by devoting increased attention, effort, and care to the task of making sense. Very similar findings have been obtained with several different manipulations of situationally-induced accuracy motivation. Overall, this research can be organized under the general view that when prior motivational states, characteristics of the situation, characteristics of the stimulus, or individual difference preferences and habits activate control concerns, ensuing accuracy motivation results in more careful and effortful processing of information that will tend to produce more accurate conceptualizations when the information-processing task is amenable to more accurate analysis through increased attention and effort.

Illusion

Although it is clear that people are sometimes motivated to form accurate depictions of reality, it is equally clear that sometimes our motives are satisfied by or show themselves through distortions in those depictions. This tendency for motivation to distort conceptualization has been studied most intensely in the research inspired by cognitive dissonance theory, and in social psychology it was here that the concept of humans as rationalizers most clearly clashed with the traditional concept of "rational man" (see Taylor, 1998, in this *Handbook*). The very notion of a consistency principle would seem to imply a form of rational governor, and yet cognitive dissonance theory turned it into an engine of self-deception.

Control motivation, shown to lead to more careful and, often, more accurate information processing, has also been shown to produce a variety of biases and distortions. How can control motivation be conceptualized in a way that allows us to understand why, how, and when it leads to accuracy or to illusion? More generally, once a motive has been aroused, how does one manage to come to the conclusions that are desired without being aware of having done so? And what about the apparent self-destructive aspects of illusions? How can people operate effectively when they see the world through the distorted lens of illusory conceptualizations? These questions are addressed in this section on illusion.

The Motivation to Be Consistent   One key property of an understanding of the way things work, either in general or for a specific setting or set of events, is internal coherence of the explanatory system. Part of making sense of things is that perceptions, explanations, and beliefs hang together; do not contradict one another; or follow from one another within the assumptions of the framework of understanding. Likewise, expectations and events should show a reasonable degree of correspondence. When expectations are violated the person is likely to gear up the available analytical mechanisms in an effort to restore understanding. Putting things together in consistent ways, to form a coherent whole, was a basic tenet of gestalt psychology, a heritage brought to social psychology by Lewin (1951) and Heider (1958). Piaget's analysis of cognitive development also emphasized the construction of coherent schema, via the processes of accommodation and assimilation (Inhelder & Piaget, 1958; Piaget, 1965), that would make sense out of the physical world within the constraints of the child's current model.

The idea that consistent structures are sought and preferred was a basic assumption of the early theories of cognitive consistency (Abelson et al., 1968; Heider, 1946; Newcomb, 1961). Some of the early empirical work

demonstrated that missing bonds are completed to form balanced structures (Burdick & Burnes, 1958; Morissette, 1958), that consistent relationships are easier to learn and remember than inconsistent ones (Picek, Sherman, & Shiffrin, 1975; Zajonc & Burnstein, 1965), and that balanced structures are preferred over imbalanced structures (Burdick & Burnes, 1958; Jordan, 1953).

Inconsistency and Cognitive Dissonance Theory But, of course, things are not so simple as a model of rational consistency might imply. There will always be some inconsistencies, some unexpected or unexplained events, since most models of the way things work are not going to be perfect (often, they are far from perfect). Some slippage would have to be tolerated, some degree of puzzlement that stays below the threshold for doing something about it, or else all of one's time and energy would be consumed tracking down and making sense of every tiny anomaly. And if inconsistency does reach the threshold of irritation or concern, perhaps there will be a temptation to ignore or do away with the inconsistency rather than admit that basic assumptions about how things work are wrong. Particularly when current conceptions have been in use for a while, have been working reasonably well, and have no clear alternative that would be easy to embrace, then the desire for consistency could be expected to lead to resistance and distortion, and therein lies one of the recurring puzzles in social psychological research. On the one hand, accuracy is obviously desirable; after all, inaccurate conceptions are inherently dangerous since they provide an erroneous launching pad for excursions into reality. On the other hand, inconsistency can be upsetting, troublesome, and difficult to understand, and some inconsistency is inevitable in any case, so ignoring or explaining away will sometimes seem like good ideas. Piaget suggested something like this: the child sticks with a current conception, even in the face of mounting evidence that it doesn't work, until reality and development allow a move to a better system of understanding. A compatible popular philosophical reference, suggesting that just these kinds of processes operate in the conduct of science, is Kuhn's (1962) suggestion that theories are not displaced by inconsistent evidence, since a good deal of inconsistent evidence is typically not enough to lead to the abandonment of a dominant paradigm until a better or more appealing approach becomes available.

If people like their explanations to have consistency, they should also dislike inconsistencies and should be motivated to resolve any obvious inconsistencies that arise. This was the basic assumption of Festinger's (1957) theory of cognitive dissonance. Cognitive dissonance research, once a dominant interest, waned in the late 1970s and 1980s, and this decline in interest has been the subject

of several recent commentaries (see Aronson, 1992; Berkowitz, 1992; Berkowitz & Devine, 1989). However, along with the return of interest in motivation has come an unexpected significant other: like Lazarus or Dracula (depending on your sentiments), cognitive dissonance research is also back!

Cognitive Dissonance Theory Festinger (1957) proposed that when cognitive elements are in an inconsistent relationship they will create negative psychological tension, motivating the person to resolve the inconsistency so as to reduce the tension (see Eagly & Chaiken, 1998, in this *Handbook,* and Petty & Wegener, 1998, in this *Handbook,* for additional coverage of this topic). While most of the research was based on a simple two-cognitive-element version of the theory, Festinger also proposed that the total amount of negative psychological tension aroused would be determined by the proportion of relevant, weighted elements that are involved in dissonant relationships—where "relevant" means that only those elements that are consistent or inconsistent (i.e., not irrelevant) are included in the calculation, and weighting is done by considering the importance of each element. Dissonance reduction is achieved when changes in the cognitive structure bring the total amount of negative psychological tension down to the threshold of acceptability. Changing cognitive elements to make them more consistent or adding new consonant elements to reduce the proportion of dissonant relationships are the two modes of dissonance reduction that were studied in the early research.

Dissonance theory quickly generated a great deal of research (see Wicklund & Brehm, 1976, and Cooper & Fazio, 1984, for reviews) and a great deal of controversy. One implication of this early research is that people may often act in ways that are not entirely rational in the service of inconsistency reduction. They will change their beliefs to bring them into agreement with their behavior, blame their inconsistent behavior on situational constraints, embrace any available justification, convince themselves that their choices are much better than they thought they were before they made them, and selectively avoid new information that might imply inconsistency. In other words, people in these experiments seemed to be more interested in the illusion of consistency than in consistency itself. These findings were not easily accepted as presented and resulted in a number of alternative explanations for dissonance phenomenon.

The initial controversy, sparked by the reverse reinforcement effect obtained in the Festinger and Carlsmith (1959) experiment (i.e., the finding that participants paid only $1 to endorse an attitude-inconsistent position were more likely to adopt that position than were participants who were paid $20), was over whether this novel finding

was simply an artifact of the experimental procedures. For example, Rosenberg (1965) argued that the Festinger and Carlsmith (1959) findings were the result of *evaluative apprehension* induced by using a single experimenter, suggesting that if the participants' concerns about how they appeared to the experimenter were eliminated the "reverse incentive" effect would also disappear. This controversy was resolved when Linder, Cooper, and Jones (1967) demonstrated that dissonance effects would be obtained only when the participants perceived that they had a choice to engage in counterattitudinal behavior, while reinforcement effects could be obtained under conditions of low perceived choice.

Another proposed alternative interpretation, *self-perception theory* (Bem, 1965, 1967), argued that participants in dissonance experiments were not experiencing negative psychological tension due to inconsistency but rather were simply inferring from their behavior, and the conditions under which it occurred, what attitudes they must hold through a self-attributional process essentially similar to that used for making attributions about others. One result of this argument was a series of studies designed to look for evidence of an increase in arousal after dissonance inductions. Several early studies obtained results indicating that participants were indeed experiencing the arousal that might be expected following the instantiation of an inconsistency (Kiesler & Pallak, 1976; Pallak & Pittman, 1972). This evidence for the presence of arousal was not consistent with the processes specified by self-perception theory. But it also became clear that the way in which arousal was involved in the dissonance reduction process did involve a form of self-attribution, one more similar to that described by Schachter and his colleagues (Schachter & Singer, 1962). Several investigators demonstrated that if arousal was misattributed to a dissonance-irrelevant source of arousal, then no evidence of dissonance reduction was obtained (Pittman, 1975; Zanna & Cooper, 1974, 1976). These findings suggested that the attribution of arousal to a dissonance-relevant source was a crucial mediating step in the dissonance arousal–dissonance reduction process.

The technique of misattribution of arousal was also used to establish some boundary conditions for the areas of applicability for cognitive dissonance and self-perception theories. Fazio, Zanna, and Cooper (1977) argued that with small discrepancies between attitude and behavior, defined as those within the subject's latitude of acceptance (C. Sherif, M. Sherif, & Nebergall, 1965; M. Sherif & Hovland, 1961), self-perception processes are likely to occur, but with larger discrepancies (those that fall in the subject's latitude of rejection), dissonance processes are more likely to predominate. By leading participants to misattribute arousal to an irrelevant source, Fazio et al. showed that such misattribution of arousal eliminated attitude change when the discrepancy was in the latitude of rejection, con-

sistent with dissonance theory, but not when the discrepancy was within the latitude of acceptance, consistent with self-perception theory. This result seemed to put the dissonance versus self-perception controversy to rest.

The idea that cognitive dissonance results were simply an example of external *self-presentation,* not of internal changes in attitudes, was suggested as another kind of alternative (Tedeschi, Schlenker, & Bonoma, 1971). The research on this topic seems not to have come to as neat an end. Given the evidence on both sides, there seems again to be both self-presentational phenomena and dissonance results that cannot easily be explained in self-presentational terms (Baumeister & Tice, 1984; see Cooper & Fazio, 1984, for a review of research on the self-perception and self-presentation controversies).

Since the late 1970s and during the 1980s research on cognitive dissonance theory proceeded at a much slower pace but did not stop entirely. Research continued on applications of dissonance techniques in psychotherapy (Axsom, 1989; Axsom & Cooper, 1985; Cooper, 1980) and, more recently, prejudice reduction (Leippe & Eisenstadt, 1994). Some new findings on selective exposure to information as a result of cognitive dissonance were reported (Frey, 1986). One area of research that did continue, however, was the work targeted on the role of arousal in the dissonance reduction process.

Dissonance as Negative Psychological Tension   While the earlier work on arousal produced by cognitive dissonance was indirect, in their second experiment Croyle and Cooper (1983) found clear physiological evidence of dissonance arousal, although they were not able to reproduce the typical attitude change findings in this study. Subsequently Elkin and Leippe (1986) were able to demonstrate both arousal increases (GSR) and attitude change following a dissonance induction, but they also obtained an intriguing additional result: attitude change did not lead to a reduction in arousal, but participants who were not given an attitude posttest (not given an "opportunity" to reduce dissonance) did show decreases in arousal. Elkin and Leippe also failed to find significant within-cell correlations between attitude change and arousal. They speculated that perhaps, in natural settings, dissonance is simply ignored or tolerated for some time until it dissipates. Losch and Cacioppo (1990) attempted to assess the separate contributions of arousal and negative affect to the dissonance reduction process. Their results, using a neutral source dissonance-irrelevant misattribution cue described as producing either positive or negative affect, suggest that it is the negative affect, and not arousal per se, that mediates attitude change in the forced compliance paradigm. They found that participants in both of their high choice conditions were more aroused (GSR) than participants in the low choice condition, but those high choice participants who

had been given a positive misattribution cue (and who therefore would be unlikely to misattribute their arousal, if as dissonance theory suggests the arousal produced by inconsistency is negatively toned) showed increased attitude change compared to the high choice participants who had been given a negative misattribution cue. There were also no positive within-cell correlations between arousal and attitude change in this study. Losch and Cacioppo concluded that it is negative affect, not simply arousal, that mediates dissonance reduction, but their evidence for negative affect was indirect since affective tone was not measured.

A study by Elliot and Devine (1994) does provide direct evidence concerning the role of negative affect. These investigators remind us that in the original statement of cognitive dissonance theory, Festinger (1957) specified *negative psychological tension* as the motivating result of cognitive inconsistency. This has been taken to include actual physiological arousal, and there is now ample evidence that such arousal is produced, but the active aspect of the changes produced by inconsistency may be negative affect rather than arousal itself. Higgins, Rhodewalt, and Zanna's (1979) work on the patterns of attribution and misattribution of arousal was consistent with this position. Elliot and Devine measured self-reported affect and found that participants given high choice to write a counterattitudinal essay reported more negative affect after agreeing to write the essay than did low choice participants. They also found that high choice participants exhibited more attitude change than did low choice participants, and that after attitude change high and low choice participants did not differ in reported negative affect. Across the two reported experiments, a modest but significant negative correlation also was obtained between amount of attitude change and final level of discomfort.

Taken together, the research on arousal indicates that cognitive dissonance does lead to an increase in arousal and negative affect, and at this point it appears that it is the negative affective tone that most clearly mediates dissonance reduction, although the definitive study in which both arousal and affect are tracked across the dissonance arousal and reduction period remains to be done.

New Controversies: Is Inconsistency Really Necessary?
The other recent source of cognitive dissonance research, perhaps not surprisingly given the history of the theory, stems from a new set of proposed alternative explanations for dissonance phenomena. Cooper and Fazio (1984) and Steele (1988; see also Schlenker, 1982) have proposed two different alternative formulations that reject the original theory's assumption that cognitive inconsistency leads to the arousal of negative psychological tension, while Aronson (1968, 1992) has revived his proposed emphasis on inconsistency with the self as crucial to the arousal of cogni-

tive dissonance, and the controversy resulting from these alternative formulations has spurred a new set of studies.

Cooper and Fazio (1984) have proposed a *"new look" alternative* to cognitive dissonance theory, reviewing a number of studies that suggest that the results predicted by cognitive dissonance theory in the forced compliance paradigm only occur when counterattitudinal behavior has consequences that are aversive (Cooper & Worchel, 1970; Cooper, Zanna, & Goethals, 1974; Goethals & Cooper, 1975; Nel, Helmreich, & Aronson, 1969) and foreseeable (Cooper & Goethals, 1974; Goethals, Cooper, & Naficy, 1979). Because these studies typically included conditions in which inconsistency without aversive or foreseeable consequences did not produce the attitude change predicted by cognitive dissonance theory, Cooper and Fazio concluded that inconsistency was not an important part of the mediating process in these studies. Their new look theory eliminates the entire line of reasoning based on the relations among consonant, dissonant, and irrelevant cognitions that formed the basis of cognitive dissonance theory, and instead argues that foreseeable unwanted events produce arousal which, if labeled negatively and as relevant to the behavior in question, will lead the person to reinterpret the event so that it is no longer unwanted.[2] In support of this position, a recent study reported by Sher and Cooper (1989) varied independently whether a speech was consistent or inconsistent with their participants' attitudes, and whether or not it entailed aversive consequences. Their finding was that aversive consequences, and not the inconsistency of the speech with attitudes, determined attitude change.

The new look position has been challenged by Aronson (1992) and his colleagues. Earlier Aronson had proposed a revision of dissonance theory, suggesting that cognitive dissonance theory makes predictions most clearly when the inconsistency in question involves an aspect of self (Aronson, 1968, 1969; Aronson, Chase, Helmreich, & Ruhnke, 1974). This modification, unlike the new look position, retained the original core assumptions about consistency and inconsistency. Aronson argues that all the aversive consequences experiments can be recast in terms of an inconsistency involving the self. For example, in the Sher and Cooper (1989) study, participants who made an attitude-consistent speech but who expected that it might "boomerang" and convince a committee to make the opposite decision showed the sort of attitude change typically predicted by dissonance theory. Because the attitude was not inconsistent with the position in the speech, Sher and Cooper reasoned that it was the aversive consequences of producing a boomerang effect with the committee, and not inconsistency, that was important. But this finding could be reinterpreted to argue that when participants knew that their speech might produce an unwanted effect, whether or not the speech itself was objectively consistent with their attitudes, they experienced an inconsistency between their

behavior (I behaved in a way that produced an expected bad result) and their self-concept (I am a good person; see Thibodeau & Aronson, 1992).

This reinterpretation of the aversive consequences literature has been tested using a new dissonance-induction paradigm. In the "hypocrisy" paradigm, participants make attitude-consonant statements and then are reminded of past behavior that was not consistent with their currently expressed view. For example, Fried and Aronson (1995) had participants make a proattitudinal speech on the importance of recyling. When participants were asked to think about their own past behaviors after making the speech, they showed evidence of dissonance reduction when given an opportunity to volunteer for recycling-related behavior, compared to participants who in addition were given information that would allow them to misattribute dissonance to an irrelevant source. Since this procedure involves no aversive consequences from the current behavior, Fried and Aronson argued that these and other hypocrisy results could not be interpreted within the confines of the new look theory (Aronson, Fried, & Stone, 1991; Dickerson, Thibodeau, Aronson, & Miller (1992); Stone, Aronson, Crain, Winslow, & Fried, 1994).

In another study casting doubt on the new look position, Johnson, Kelly, and LeBlanc (1995) found that attitude change only occurred when inconsistency *and* aversive consequences were present, suggesting inconsistency is a necessary feature of dissonance-producing manipulations. Harmon-Jones, Brehm, Greenberg, Simon, and Nelson (1996) have also shown that the production of aversive consequences is not necessary for dissonance to occur. In their first study, participants who chose to drink an unpleasant tasting beverage showed dissonance reduction effects even though it is hard to argue that this behavior has any aversive consequences beyond the taste itself. In a second study, participants engaged in a counterattitudinal behavior that was private, and still showed attitude change. Their third study showed that the procedure used in the second study did indeed produce dissonance, by providing evidence of arousal in the high choice condition.

In another alternative formulation that rejects inconsistency as an important aspect of dissonance-producing situations, Steele (1988; Liu & Steele, 1986) proposed *self-affirmation theory*. Consistent with Aronson's proposed reformulation, Steele assumed that individuals are motivated to maintain a conception of self as effectively and morally good. When behavior suggests otherwise, such as in the forced compliance paradigm, it motivates a desire for self-affirmation. This may be accomplished by, for example, bringing one's attitude in line with one's behavior, or it may be done by any other means of self-affirmation, such as reasserting a valued aspect of self even if it is irrelevant to the original source of discomfort. Threat to selfesteem, not consistency, is assumed to be the impetus for this process.

Steele and Liu (1981, 1983) found that if participants were given an opportunity to affirm an important value, then dissonance reduction on an issue not related to the self-affirmed value was eliminated. Consistent with this theoretical perspective, Steele, Spencer, and Lynch (1993) again found that positive self-feedback eliminated the usual attitude change effects in the forced compliance paradigm, and also found that participants with high self-esteem (either measured or manipulated) also did not show dissonance effects even in the face of negative feedback, presumably because they (but not low self-esteem participants) had sufficient self-affirmational resources to absorb or defend against the implications of the self-discrepant behavior.

However, two different recent investigations cast doubt on Steele's rejection of inconsistency as a crucial element in studies of cognitive dissonance. J. Aronson, Blanton, and Cooper (1995) were able to demonstrate that participants who had been through a standard dissonance-induction treatment shied away from the self-affirmation opportunities most relevant to the source of dissonance in favor of dissonance-irrelevant self-affirmation opportunities. This demonstration of disidentification (Steele, 1990, 1992) is most interesting in its own right, but it is another finding in these studies that is most relevant to the current discussion. In these studies the dissonance induction led to attitude change even when opportunities for self-affirmation were supplied, in contradiction to the predictions of self-affirmation as an alternative to dissonance theory.

Perhaps even more directly challenging to the self-affirmation position, Simon, Greenberg, and Brehm (1995) have introduced yet another new dissonance paradigm, one that provides a dissonance-based alternative explanation for Steele's typical findings. Arguing that a mode of dissonance reduction open in the original theory, that is, changing the importance of an inconsistent cognition, has been neglected, Simon et al. (1995) presented another new dissonance paradigm, *trivialization*. Their suggestion is that dissonance reduction can be achieved by providing the opportunity for participants to reduce the importance of, or trivialize, an inconsistency. They argue that the self-affirmation procedures employed in Steele's research do just that. In the context of a self-affirmation that reaffirms the fundamental integrity and importance of a valued aspect of self, inconsistencies that might otherwise be bothersome are made to seem relatively unimportant. In a series of studies, Simon et al. showed that when participants were given trivialization opportunities, they eschewed other means of dissonance reduction, and they also demonstrated that self-affirmation opportunities do indeed lead to the trivialization of inconsistencies.

Perhaps the best way to view this recent set of proposed alternative explanations and their apparent rebuttal in some studies is to accept Berkowitz's (1992) suggestion that the attempt to specify or add on "necessary conditions" (e.g.,

relevance to self, or aversive consequences, or threat to self as effective and moral) may be misleading. It may be more sensible to view these conditions as moderating variables that enhance or diminish the basic dissonance processes rather than as absolutely necessary antecedent conditions.

Summary: The Return of Cognitive Dissonance Theory
One thing is clearly illustrated by the latest burst of research interest: cognitive dissonance theory is resilient. Having survived early alternative formulations based on evaluation apprehension, self-perception, and self-presentation, the most recent research suggests that the theory is also up to the task of rebutting the more recent alternative explanations based on the suggested primacy of aversive consequences or self-affirmation processes. It also appears that cognitive dissonance theory is still capable of generating interesting questions, and even new paradigms such as those based on hypocrisy and trivialization. New explorations into areas such as dissonance and humor (Hobden & Olson, 1994), dissonance and regret (Gilovich, Medvec, & Chen, 1995), and dissonance and inaction inertia (Tykocinski, Pittman & Tuttle, 1995) continue to arise, and Schultz and Lepper (1996) have proposed that cognitive dissonance reduction can be viewed as parallel constraint satisfaction.

One interesting implication of some of the recent research is that a preferred, and perhaps *the* preferred, mode of dissonance reduction may be simply to ignore inconsistency until it fades away. Elkin and Leippe (1986) found that arousal was most likely to fade away if participants were *not* given a dissonance reduction opportunity. In the hypocrisy paradigm (e.g., Aronson et al., 1991), evidence of dissonance-spurred activity was obtained only when prior inconsistent behaviors *and* a currently held attitude were both made salient; otherwise the rather obvious latent inconsistency was ignored. It is easy to imagine that a rather large number of such inconsistencies could be evoked for most people, suggesting that potential inconsistency is often ignored. Even when dissonance is aroused and dissonance reduction opportunities are present, they may not be taken. One example of a mechanism that might ultimately result in ignoring dissonance was suggested by Elliot and Devine's (1994) finding that participants did not immediately make use of an attitude change opportunity, suggesting that some plausibility constraints (Kunda, 1990; Pyszczynski & Greenberg, 1987; see the discussion of this below) may inhibit the immediate use of dissonance reduction strategies in favor of a slow dissipation as the dissonance-provoking incident is left behind in the stream of behavior (Barker, 1963). In this way, only the most pressing or salient inconsistencies need to be addressed in more energy-consuming fashion.

The status of inconsistency as a source of motivation has clearly been questioned from a variety of perspectives, and research on this basic issue is likely to continue. One general question still to be resolved, if indeed inconsistency is a source of motivational arousal, concerns the origins of this motive. Is it an inherent property of cognitive systems, a distinct motivation on its own? Or is it a motive that develops in the service of more basic motivational issues of concern with understanding, control, and effective commerce with the environment, or is it an acquired concern generated by socially-defined expectations and norms for consistency?

Pan-motivational Analyses of Illusion Recently several theoretical analyses of the cognitive processes through which motivational desires lead to distorted or illusionary conclusions have been proposed. The term "pan-motivational" is suggested because these analyses are targeted on what transpires after motivational desires have been aroused, without including in the formal analysis any restriction on what those motives might be, or how or when they might arise. For example, in their analysis of biased hypothesis testing (reviewed directly below), Pyszczynski and Greenberg (1987) specify the cognitive steps that might be taken so as to come to a desired conclusion, but the actual motivational concerns that would produce such desires could come from any of a wide variety of motivational sources, including ". . . needs for self-esteem, faith in the cultural world-view, ethnocentrism, control, cognitive consistency, equity, and a belief in a just world . . ." (p. 315). As such, these pan-motivational theories are about the *consequences* of motivational arousal, rather than about motivational arousal itself.[3]

After reviewing several of these analyses, using them in part to illustrate some of the sorts of motivated illusions that have been demonstrated in the literature, the discussion will return to control motivation to illustrate how the analysis of a specific motivation (control motivation) has been taken all the way through the process of studying how illusions can be generated.

Biased Hypothesis Testing Building on previous work on biased hypothesis testing (e.g., Snyder & Gangsted, 1981), Pyszczynski and Greenberg (1987) reviewed the research on the self-serving bias, one of the sources of illusions that has been studied most intensively, showing that the tendency to take more credit than one deserves for success and less than one deserves for failure clearly involves a motivational impetus (as opposed to a purely cognitive explanation—see Miller & Ross, 1975; Nisbett & Ross, 1980; Zuckerman, 1979). They identified three categories of findings that implicate the presence of motivational influences. First, the sorts of affective reactions one would expect if participants in such experiments were motivated to make particular attributions are indeed present (McFarland & Ross, 1982; Mehlman & Snyder, 1985; Pyszczynski & Greenberg, 1985). Second, when these affective

reactions are subjected to misattribution of arousal manip-
ulations, the pattern of self-serving biases changes as ex-
pected (Stephan & Gollwitzer, 1981; Fries & Frey, 1980;
Gollwitzer, Earl, & Stephan, 1982). Finally, the research
on self-handicapping, because it shows that people will
take action to place obstacles in their path in order to create
excuses for failure, is cited as obvious evidence that people
desire particular explanations for success or failure and are
sufficiently motivated at times to create the necessary attri-
butional conditions to be able to come to desired conclu-
sions (e.g., Berglas & Jones, 1978; Jones & Berglas, 1978;
Riggs, 1992).

Pyszczynski and Greenberg suggest that when per-
ceivers are processing information they engage in hypothe-
sis testing that may be more or less extensive, and more or
less affected by motivational desires, but that the conclu-
sions that perceivers will find acceptable operate within
certain *plausibility constraints,* that is, the conclusions
must be seen as sensible from at least some point of view
(see Darley & Gross, 1983). When the hypothesis genera-
tion and testing process is actually biased by motivational
desires, the resulting inferences still must have at least the
illusion of objectivity.

Motivated Reasoning   Kunda (1990) has made an argu-
ment similar to that of Pyszczynski and Greenberg. She ar-
gues that motives can bias reasoning and inferences by
subtly influencing the sorts of reasoning processes that are
used, so that when a particular conclusion is desirable be-
cause of the arousal of a motivational state it is more likely
to be reached, and plausibly reached, because cognitive
processes and strategies are selected so as to make that out-
come more likely. This is done so that the reasoner believes
that the process was unbiased. This does mean that there
are limits, or plausibility constraints (Pyszczynski &
Greenberg, 1987), to the extent that bias can occur.

Particular motivations may have biasing effects through
selective memory search and construction. Sanitioso,
Kunda, and Fong (1990) found that participants who be-
lieved that a particular trait (introversion or extroversion)
was more conducive to success biased their own self-char-
acterizations in the favorable direction, but this bias oc-
curred within the constraint of keeping the same overall
self-view (i.e., participants moderated or made more ex-
treme their introverted or extroverted status without actu-
ally changing that status). Evidence for an underlying bi-
ased memory search was suggested by the finding that
participants tended first to generate memories in line with
the purported valued characteristic, so that if introversion
was considered conducive to success, participants tended
to generate first autobiographical memories consistent with
introversion.

There are a number of studies showing that people have
self-serving personal theories of success (Dunning &

Cohen, 1992; Dunning & McElwee, 1995; Dunning, Perie,
& Story, 1991; Kunda, 1987). A series of studies reported
by Dunning, Leuenberger, and Sherman (1995) shows how
the motivated inference bias identified by Kunda (1990)
can lead to self-serving theories of success by using manip-
ulations that in other settings have been shown to evoke an
accuracy motive. In their first study, Dunning et al. (1995)
compared participants who were to act as a therapist in
front of an audience to participants who expected merely to
observe such a performance. This manipulation should
have made a good performance as a therapist more impor-
tant to the actual performance participants, and indeed they
proceeded to claim that the characteristics they believed
they actually possessed were the ones associated with
being a successful therapist. In the second and third stud-
ies, participants who were given success or failure feed-
back on a test of intellectual abilities were compared. The
failure treatment would be expected to arouse control con-
cerns and lead to accuracy motivation, as has been demon-
strated in numerous other studies reviewed earlier. How-
ever, participants in these studies showed self-serving bias:
failure participants were more likely than success partici-
pants to exhibit self-serving theories about the characteris-
tics required for a successful marriage (Study 2) and to
give more favorable evaluations to similar than to dissimi-
lar others (Study 3). These results suggest that when the
self is involved and the judgments are self-relevant, osten-
sibly objective processing can in fact led to self-serving
conclusions. One general problem for future research is to
identify the crossover point. When will participants actu-
ally seek accuracy, and when will they instead bias their
apparent accuracy-seeking behaviors so as to come to a
preferred conclusion?

There is also evidence that the employment of statistical
heuristics can be altered to serve motivational desire. For
example, although base rate information is often ignored,
leading to erroneous conclusions that are presumably not
the result of motivational desire (Kahneman, Slovic, &
Tversky, 1982), it may sometimes be employed if a desired
conclusion can only be reached through its use. In a most
interesting study, Ginossar and Trope (1987, Experiment 4)
gave participants a classic problem that has been used to
show that participants typically ignore base rate informa-
tion (Kahneman & Tversky, 1972). They found that partici-
pants did indeed use base rate information, but only when
they were playing the role of a person who wished to come
to a conclusion that could only be reached through the use
of base rate information.

Another area of study in which biases have been shown
to intrude is in the evaluation of research results. For exam-
ple, Pyszczynski, Greenberg, and Holt (1985) found that
participants who received positive feedback on a personal-
ity test agreed more with a study that suggested that the test
was of high validity—and agreed less with a study that sug-

gested that the test had low validity—when compared with participants who received negative feedback on the test.

These and other examples illustrate Kunda's (1990) basic contention, that the proposed mechanism behind many illusions is the construction of desired justifications that make use of a biased subset of all potentially available information and information analysis rules.

Need for Closure   Kruglanski and Webster (1996) have recently reviewed the research on need for closure. Need for closure refers to a person's current desire either to come to a nonambiguous conclusion on some problem, or to avoid coming to such a conclusion. As such it refers to what persons do after they have been previously motivated, as do the other pan-motivational theories. In the need for closure formulation, the source and nature of that prior motivation is what will determine where the person will be along the need-for-closure continuum. Variables that prompt haste in coming to a conclusion should lead to rather minimal processing, reliance on heuristics, and the construction of less complex explanations, all conditions that should be conducive to illusions and biases. Further, when pressure to achieve closure is high, participants may "freeze" on a solution early and stick with it. Thus manipulations such as time pressure, or indications that coming to a quick conclusion is desirable or indicates desirable traits, have been shown to lessen the amount of time and energy devoted to coming up with an accurate conception (e.g., Mayseless & Kruglanski, 1987, forming unambiguous, clear-cut opinions implies intelligence; Kruglanski & Mayseless, 1988, time pressure). On the other hand, variables that induce strong accuracy motives, such as an emphasis on having the correct answer or making important outcomes contingent on the answer, should lead to a desire to avoid premature closure and be characterized by more extensive and effortful information processing (see the previous section on accuracy in this chapter). As an example, Ford and Kruglanski (1995) showed that participants under an increased cognitive load were more likely to be affected by primed traits when forming impressions; they also showed that participants high in the dispositional need for closure exhibited similar effects.

Control and the Illusion of Control

Control Deprivation and Effort Withdrawal   Control motivation does not always lead to enhanced accuracy motivation (as reviewed in the earlier section on accuracy) or to improved performance. In fact, in the Pittman and N. Pittman (1980) study that first showed control deprivation leading to increased attributional activity, the same participants also showed decreased performance on an anagram solution task as has often been found in the learned helplessness literature. Pittman and D'Agostino (1985, 1989;

see also Pittman, 1993) have suggested that an experience with deprivation of control has two effects; it increases the desire to regain understanding and potential control, and also increases the desire to avoid the negative implications of any further loss of control. The person will thus be responsive to features of the situation that signal possible control restoration or that signal the danger of further experience of lack of control. If the situation is one in which increased effort, attention, and thought seem unlikely to fail, then accuracy motivation will predominate. However, if the situation appears to be one in which such attempts are likely only to lead to another experience with lack of control, then instead the person will initiate ego-protective measures. Such measures are seen in the literature on self-handicapping (Jones & Berglas, 1978; Riggs, 1992), where participants engage in effort withdrawal to fend off any personal negative implications of an unwanted performance. Such defensive measures can have the effect of maintaining an illusion of controllability ("I could have done it if I wanted to") although they are in fact more likely to guarantee that the situation will not be controlled or accurately understood.

When the "task" is a judgment task that seems to have no clear right or wrong answers, and when the behavior required is simply to pay attention and think, that is, no overt performance is called for, then the risks of a diagnostic failure are slim and accuracy motivation should prevail, as has already been shown in a number of studies reviewed earlier. But when the task calls for overt performance and looks like one on which attempts to exert control may fail as miserably as they just have on the previous task, then ego-protective effort withdrawal would seem a more likely outcome. Pittman and D'Agostino (1989, Experiment 3) tested this analysis by introducing a set of conditions that would have the effect of increasing the salience of self-protective concerns to see if that would reverse the enhanced information-processing effects found in their previous research. Ego-protective concerns were made salient by telling participants that the text-processing task on which they would be tested was highly diagnostic of ability (Frankel & Snyder, 1978). When this information about diagnosticity was not given until after the text had already been processed, control-deprived participants still showed better recognition of facts and inferences than did baseline participants, as in previous studies. But when these instructions were given before the text was read, control-deprived participants spent less time reading the text and performed more poorly than baseline participants when asked to recognize facts and inferences from the text, as would be expected when ego-protective concerns become ascendant.

Riggs and Pittman (1991), taking an opposite tack, showed that when the motivation to acquire control was increased the performance decrements usually found on anagram solution tasks were reversed. Following a control-de-

privation procedure, half the participants were told that the better they did on the first part (the anagram solution task), the more control they would have in the second part. The other participants were not given this information. The performance decrements usually shown by control-deprived participants on the anagram solution task were obtained when participants were not led to expect anagram solution to increase control over the next task, but control-deprived participants performed better than baseline participants on the anagram task when they expected control enhancement through anagram solution.

One implication of these findings is that when the reaction to deprivation of control is ego protective and effort is withdrawn, or other defensive measures are employed, the person will become less accurate and more subject to falling prey to illusions and biases; part of the price of defensive behavior.

The Illusion of Control   The control motive can also lead directly to illusions of control. Because control is strongly desired, in ambiguous situations where the amount of control is difficult to ascertain, people might be expected to err on the side of believing that they have it. In this way, the control motive can show itself directly.

In an influential series of studies, Langer (Langer, 1975; Langer & Roth, 1975) demonstrated that people are indeed subject to illusions of control. She demonstrated that, on a variety of tasks in which outcomes are obviously determined by chance or random factors, participants are susceptible to the illusion of control. Langer argued that superficial control-related aspects of these settings, aspects that are often present in tasks where skill actually does play a role in obtaining desired outcomes, are responsible for the development of the illusion of control. This prediction has been confirmed in a variety of recent studies (Bouts & Van Avermaet, 1992; Burger, 1986; Dunn & Wilson, 1990; Fleming & Darley, 1990; Gilovich & Douglas, 1986). Biner, Angle, Park, Meltinger, & Barber (1995) reported findings that indicate that the person's need state increases the likelihood of the illusion of control; they also found support for the contention that these illusions of control are mediated by increased estimates of the role of skill in determining these chance outcomes. In one study, they found that the participants' degree of hunger affected both their confidence in winning a hamburger and their estimates of the amount of skill involved in the (chance) card drawing task that would determine whether the hamburger was obtained. Hungry participants thought they were more likely to win the hamburger and that more skill was involved in the card-drawing task compared to satiated participants. In a field study, Biner et al. (1995) showed a similar effect on state lottery games, finding that income level (presumably related to need for money) was negatively correlated with expectations of winning, and that the path

to these estimates went through estimates of the extent to which skill played a role in winning. Since Burger and his colleagues (Burger, 1986; Burger & Schnerring, 1982) have shown that participants high in dispositional desire for control are more likely to exhibit illusion of control effects, it can be argued that need state led to higher desire for control, which in turn led to greater susceptibility to the illusion of control.

The desire for control may also be related to the nature of thoughts about things that never occurred. Counterfactual thinking (Kahneman & Tversky, 1982) refers to imagining alternative worlds, events that might have happened but in fact did not occur. Counterfactual thinking is more likely to be generated by surprising or unexpected aspects of an event (Kahneman & Miller, 1986; Kahneman & Tversky, 1982) and by actions taken rather than actions not taken (Kahneman & Miller, 1986; Landman, 1987). These findings suggest some role for control concerns in the generation of counterfactuals.

Markman, Gavanski, Sherman, & McMullen (1995) investigated the role of perceived control on the generation of upward (imagining a better world) and downward (imagining a worse world) counterfactual thoughts. In a modified computer-generated "wheel of fortune" game, participants experienced either a near big win or a near big loss, and had been given control either over where the spin of their wheel would start, or which of two wheels would be theirs. The results showed that participants generated counterfactual thoughts about the dimension of control relevant to the choice they had (their wheel in the case of spin choice, the other wheel in the case of wheel choice), and affectively toned (upward or downward) based on the outcome associated with the wheel on which they focused. This finding suggests a strong role for control in the generation of thoughts about what might have been.

Taylor and Brown (1988, 1994), in their review of illusions and well-being, document three related positive illusions that appear to be common: unrealistically positive self-evaluations (e.g., Greenwald, 1980), exaggerated perceptions of control or mastery, and unrealistic optimism. For example, people generally believe they are more likely to experience positive outcomes (Weinstein, 1980) and less likely to experience negative outcomes (Kuiper, MacDonald, & Derry, 1983; Perloff & Fetzer, 1986; Robertson, 1977) than are other people. Taylor and Brown reviewed a variety of evidence suggesting that such positive illusions are associated with positive mental health outcomes. But since accuracy would seem to be required for effective action, how can illusions be good? Two pan-motivational models that make a distinction between thinking about acting and acting may provide at least part of the answer.

One of these models about how motivation can bias conclusions and create illusions in a positive way has been suggested by Hilton and Darley (1991). The general per-

spective taken in the interaction goals approach (Jones & Thibaut, 1958) is that the perceiver is a goal-driven, motivated actor, with limited resources *and* specific intended outcomes (e.g., Bargh, 1989; Fiske & Neuberg, 1990; Hilton, Darley, & Fleming, 1989; Miller & Turnbull, 1986; Srull & Wyer, 1986; Swann, 1984).

The interaction goals analysis, stemming from Jones and Thibaut (1958), specifies a range of interaction goals, from relatively permanent or basic goals to transient goals initiated by the specifics of the situation (see Gilbert, 1998, in this *Handbook*). These goals are subject to correction and modification as an interaction progresses (see also Bargh, 1990). How might one categorize the wide variety of possible goals? Jones and Thibaut (1958) made a distinction among causal-genetic sets (what caused an actor to behave in a particular way), value-maintenance sets (the approach and avoid-relevant aspects of an interaction partner), and situation-matching sets (finding the appropriate social norms for the current situation). However, Hilton and Darley (1991) suggest a different classification, distinguishing between *assessment sets* and *action sets*. When they are in assessment sets, perceivers are trying to generate correct impressions by carefully processing available information (see the review of accuracy earlier in this chapter). In action sets, however, participants are actively working toward some more concrete goal, and impressions are formed only to the extent that they are relevant in that context. Impressions in action sets would tend to be less rich, more stereotypical or category-based, and perhaps more automatic and less "corrected."

Action sets, which Hilton and Darley suspect are by far more common because people are usually doing and perceiving (not perceiving and doing), are more variable than assessment sets. Often it is not necessary to spend (waste) much time and effort on forming impressions because they are not really needed in order to act. For example, many interactions are so constrained by social norms that one need not pay attention to the particular actor fulfilling that role. Also, social interaction is often a process of negotiation in which actors make it clear what they want from their partners, thereby "creating" rather than finding the desired interaction partner characteristics. Consistent with this analysis, Hilton, Klein, & von Hippel (1991) found that expectancy effects were more robust when perceivers were using action sets rather than assessment sets.

A conceptually compatible analysis has also been provided in Gollwitzer's (Gollwitzer, 1990; Gollwitzer, Heckhausen, & Steller, 1990; Gollwitzer & Kinney, 1989) applications of Heckhausen's (1986) Rubicon model of action. Heckhausen made a distinction between behavior before a decision is made and behavior after a decision is made. Predecisional behavior is characterized by a *deliberative mind-set,* essentially the sort of accuracy-motivated style of information processing demonstrated in many of the stud-

ies reviewed earlier. Postdecisional behavior, however, is characterized by an *implemental mind-set,* where the concern shifts from attempts to figure out what to do to a concern with getting the job done. In an implemental mind-set, for example, thoughts such as "I can do this" and information coordinated to that point of view are more helpful since the decision to try has already been made. In the studies reported by Langer and others, participants are usually in the process of doing something. When asked to assess their degree of control, or to make decisions that would reflect their implicit assumptions about controllability, participants are probably in an action or implemental mind-set, and so may be making errors they would be less likely to make in assessment or deliberative sets (i.e., when accuracy motivation is ascendant).

Gollwitzer and Kinney (1989) tested the prediction that the illusion of control might be most likely, and even useful, when the person was already in a postdecisional implemental mind-set. They also predicted that the illusion of control would be less likely when the person was in a predecisional deliberative mind-set. In two experiments they found that deliberative mind-set participants were more accurate in their judgments of control than were participants in an implemental mind-set. This finding is quite compatible with other findings of reduction or elimination of bias when participants are accuracy-motivated, and suggests that the optimism associated with the illusion of control is most likely (and perhaps most useful) once the person is in an action or implemental mind-set.

The distinction between an assessment or deliberative set, and an action or implemental set made by Hilton and Darley (1991) and by Gollwitzer and Kinney (1989) may make sense of the illusion of control and mental health findings. Taylor and Gollwitzer (1995), using the deliberative-implemental analysis, argued that such illusions are less likely when persons are in a deliberative or pre-action phase, and more likely when persons are in an implemental or postdecisional phase. In three studies a deliberative mind-set was induced by asking participants to think about an unresolved personal problem, one for which the person had not decided whether to act or how to act, while an implemental mind-set was induced by asking participants to think about a project they had decided to start or had already started. The results indicated that participants in a deliberative mind-set were indeed less likely to show positive illusions than implemental mind-set participants, with baseline participants generally falling between these two groups.

The deliberative mind-set is presumably one in which the person has an accuracy goal, wanting to make the correct decision about whether to act, and if so how to act. The implemental mind-set, however, as Hilton and Darley (1991) have suggested, is more a case of doing and thinking than of thinking and doing, since the decision to act has

already been made. It makes sense that in an implemental mind-set, resources are targeted on success or control rather than an evaluation of the situation since such an evaluation has either already been made, or is not considered to be necessary.

Summary Overall the research on illusions shows clearly that sometimes motivation can intrude to bias beliefs, interpretations, and conclusions. In the research on cognitive dissonance theory, the motive to reduce the negative psychological tension produced by inconsistency can lead to attitude change, the addition of justifications, and changes in the perceived importance of attitudes and behaviors (but as we have seen, this interpretation has been and continues to be the subject of controversy). More generally, the activation of a variety of specific motivational sources can lead to subtle distortions in the reasoning process that have the effect of producing motivationally compatible conclusions. The work on control and the illusion of control, and on mind-sets, suggest two different ways of understanding when accuracy or comforting illusions will predominate. In the control motivation research, the relative salience of the opportunity to regain feelings of understanding and control versus the threat of further experience with inability to understand and control has been shown to determine whether accuracy motivation will predominate. The work on mind sets points to the importance of distinguishing the nature of the person's general goal or action state. Accuracy motivation is likely to predominate when a person is in the process of deciding what to do, while motivationally compatible illusions are more likely when the person has decided to act and is in the process of acting or about to act.

ACTING ON AND IN THE WORLD

The work on accuracy and illusion is primarily about cognitive representations, about the motivations that underlie and influence the construction and alteration of understanding. But this research (with some exceptions, of course) generally tends not to focus on meaningful overt behavior. Rather, it is designed to examine what happens to understanding either independently of overt action, before some often unspecified action might occur, or, as in the case of cognitive dissonance theory, after action has occurred. The dependent variables commonly used in this research are, appropriately, those most closely tied to and likely to reveal information about cognitive activity. But people are doers as well as thinkers, makers and destroyers of physical constructions both magnificent and trivial. The distinctions made by Hilton and Darley (1991), who assert that people are probably more often doing and thinking (action sets) rather than thinking and doing (assessment sets), and by Taylor and Gollwitzer (1995), who underline the differ-

ences between deliberative and implemental sets, point us in the direction of considering other aspects of behavior.

Understanding how motivation exerts its influence on overt behavior is a topic that can be considered in its own right. Identifying the motivational systems and preferences that underlie behavior is one major research enterprise. Sometimes attention is focused on the aspects of activities that are inherently satisfying, while at other times the focus is instead on more distant goals, and current actions are treated as steps along the way to those ends. The kinds of preferences and actions associated with these two different motivational orientations have been the subject of a considerable amount of research, reviewed in the next section.

Another fundamental aspect of taking action concerns choices about effort exertion. People do make calculations about the wisdom and usefulness of action. They do not always expend maximum effort, or engage in all of the possible behaviors that are open to them. How motivation affects the likelihood of behavior and the nature of behavior is the other area of motivational research on overt actions that is reviewed below.

Intrinsic and Extrinsic Motivational Orientations

When a person engages in an activity he or she may take either an intrinsic or an extrinsic motivational orientation (Pittman, Boggiano, & Ruble, 1983). This distinction concerns whether the reason for engaging in the activity is seen to be inherent in the activity, or instead is seen to be mediated by the activity. When a person adopts an *intrinsic motivational orientation,* the primary focus is on rewards inherent in engagement with the activity; the activity is approached as an "end in itself" (Kruglanski, 1975). Features such as novelty, entertainment value, satisfaction of curiosity, and opportunities for the experience of effectance and the attainment of mastery typically characterize the kinds of rewards sought from engagement in an activity when an intrinsic motivational orientation is taken. When a person adopts an *extrinsic motivational orientation,* the primary focus is on rewards that are mediated by but not part of the target activity. The activity is approached as a "means to an end" (Kruglanski, 1975), either motivated by or a step along the way to something else. Features associated with an expedient approach, such as predictability, simplicity, and ease of completion are typically preferred when an extrinsic motivational orientation is taken.

The initial research on the consequences of shifting from an intrinsic to an extrinsic motivational orientation documented the existence of an *overjustification effect* (Lepper, Greene, & Nisbett, 1973). When participants are given rewards for engaging in an activity that is initially intrinsically interesting, they show a decrease in interest during subsequent free choice periods (that is, they are less

likely to choose to engage in the activity) compared to participants who engaged in the activity without being given rewards (Deci, 1971). This effect has been replicated with a wide variety of activities, rewards, and populations, and the general phenomenon of a decrease in free choice interest has also been demonstrated with a variety of external constraints other than reward, such as lack of choice, surveillance, and deadlines (for reviews see Deci, 1975; Lepper & Greene, 1978; Deci & Ryan, 1985; Pittman & Heller, 1987; Boggiano & Pittman, 1992). In general, the overjustification phenomenon can be thought of as occurring because the addition of contingent reward causes a shift from an intrinsic to an extrinsic motivational orientation (Pittman, Boggiano, & Ruble, 1983). Once an activity is categorized as one associated with an extrinsic orientation, it is less likely to be chosen in a free choice period because the reason for engaging in the activity (an external contingency or constraint) is no longer available and because it is less likely to be seen as the sort of thing one does in one's free time.

Cognitive Evaluation Theory Deci (1975; Deci & Ryan, 1985) has argued that intrinsic motivation is based on feelings of competence and self-determination, feelings that are often influenced by external constraints. These constraints, such as contingent reward, have two aspects: informational and controlling. The informational aspect of events can provide information about competence, so that positive competence information can support or enhance intrinsic motivation. But external events can also exert control over behavior, and when the external controlling aspect of an event is salient it can undermine feelings of self-determination and resulting intrinsic motivation. When a person is extrinsically motivated, it is the controlling aspect of external events that is predominant. These basic tenets of cognitive evaluation theory have received substantial empirical support (see Deci, 1975; Lepper & Greene, 1978; Deci & Ryan, 1985; Pittman & Heller, 1987; Boggiano & Pittman, 1992, for reviews of this literature).

Motivational Orientations and Information Processing Although the main thrust of research on intrinsic and extrinsic motivational orientations is behavioral, there are several studies that demonstrate a connection between motivational orientations and information processing effects, providing a point of contact between the previous general section on The Construction of Understanding and research on motivational orientations.

Boggiano and Main (1986) showed in a series of studies that if two activities are put into an "if you do A, then you can do B" relationship, the second activity becomes preferred over the first (Lepper, Sagotsky, Dafoe, & Greene, 1982). This effect presumably occurs because the first ac-

tivity is seen as a means to an end, leading to the adoption of an extrinsic motivational orientation, while the second activity becomes an end in itself, generating an intrinsic motivational orientation. In an interesting study that can be interpreted in that light, Webster (1993) told participants that they would be participating in two different tasks and varied whether the second task was more or less attractive than the first (while holding the first constant). When the second task was more interesting, participants could be expected to adopt an extrinsic motivational orientation toward the first task and would therefore be likely to adopt an expedient approach to the task (e.g., "let's get this over with"). When the first task was more attractive, however, participants might be expected to savor it (intrinsic motivational orientation) before going on to the comparative drudgery of the second task. The first task was actually a version of the Jones and Harris (1967) attitude attribution paradigm in which correspondence bias is typically demonstrated. Webster found that the correspondence bias was significantly reduced when it was the result of the more attractive task, presumably because in savoring the task participants engaged in the kind of extensive processing that accuracy-motivated participants have been shown to use (see the previous section on accuracy). Webster was able to produce the same sort of result when the first task was modified to produce overattribution to the situation (Quattrone, 1982). In another study, Webster found that participants who scored high in chronic need for closure (Webster & Kruglanski, 1994) were more likely to show the correspondence bias than participants who were high in the need to avoid closure, again suggesting that those who are intrinsically motivated to savor the process of making sense are more likely to show the kind of information processing characteristic of accuracy-motivated persons.

D'Agostino and Fincher-Kiefer (1992) reported a compatible finding: participants high in the need for cognition (Cacioppo & Petty, 1982), who could be said to be intrinsically motivated to think about things, were less likely than those low in need for cognition to show the correspondence bias. D'Agostino and Fincher-Kiefer also showed that the addition of a cognitive load produced the correspondence bias even among those high in need for cognition, implicating additional processing as the means by which participants high in the desire for cognition typically avoid correspondence bias.

These results suggest that the nature of a person's motivational orientation toward an activity may have a great influence on the kinds of information processing in which the person will engage. There are also indications that these effects are related to control motivation. Thompson, Chaiken, and Hazlewood (1993) gave participants either an extrinsic reward or no reward for engaging in a brainstorming task, and then assessed their participants' subsequent

free choice interest in more brainstorming problems. In addition, they were able to divide the participants into groups on the basis of two individual difference measures: need for cognition (Cacioppo & Petty, 1982) and desire for control (Burger & Cooper, 1979). The results indicated that participants high in need for cognition were more likely to engage in additional brainstorming, but that this tendency was undermined by extrinsic reward. The same relationship was obtained with participants high in the desire for control, and in fact the desire for control scores were the strongest predictors of this effect: adding need for cognition into a regression equation after entering desire for control accounted for no additional variance. This finding suggests that desire for control is related to both need for cognition and to the undermining effects of extrinsic reward, and indicates that further exploration of the relationships between control motivation and intrinsic motivational orientations would be useful.

Competence and Competence Valuation   Feelings of competence and self-determination play a central role in maintaining and enhancing intrinsic motivation in cognitive evaluation theory, and therefore much of the recent research has been directly targeted on these mediating variables. One interesting outcome of this research is that an additional variable, *competence valuation* (the person's investment in doing well or performing competently on an activity), has been identified by Harackiewicz and her colleagues (Epstein & Harackiewicz, 1992; Harackiewicz, Manderlink, & Sansone, 1992; Harackiewicz, Sansone, & Manderlink, 1985) as an important mediator of the effects of various contextual manipulations on intrinsic motivation. For example, Elliot and Harackiewicz (1994) compared the effects of mastery-focused (emphasizing personal improvement) and performance-focused (emphasizing specific externally determined performance targets) goals in interaction with the participants' chronic level of achievement motivation (Atkinson & Raynor, 1974; McClelland, Atkinson, Clark, & Lowell, 1953). Overall, mastery goals were found to have a more positive influence on intrinsic motivation than performance goals (see Boggiano & Ruble, 1978). As in previous work (e.g., Harackiewicz et al., 1992), however, level of achievement motivation moderated these effects. For participants high in achievement motivation, performance goals did not undermine intrinsic motivation, while for participants low in achievement motivation, mastery goals were particularly effective in enhancing intrinsic motivation measured by free choice engagement. In both cases, degree of task involvement and competence valuation were shown to be important mediators of intrinsic motivation.

In a related area of research, some previous studies have found that competition undermines intrinsic motivation (Amabile, 1982; Deci, Bentley, Kahle, Abrams, & Porac,

1981), but others have found that competition can increase intrinsic motivation (e.g., Epstein & Harackiewicz, 1992; Reeve, Olson, & Cole, 1985, 1987; Vallerand & Reid, 1984). For example, research reported by Reeve and Deci (1996) indicates that competition can lead to enhanced intrinsic motivation, but only if the person wins in a setting that is not controlling. Reeve and Deci compared a no competition condition to four variants of competition (no feedback about the outcome, lose feedback, win feedback, and win feedback accompanied by pressure to win). Winning tended to increase subsequent intrinsic motivation, while pressure tended to decrease intrinsic motivation. Path analyses indicated that intrinsic motivation was enhanced through increased feelings of competence when winning, and decreased by decreased feelings of self-determination when pressured, while competence valuation enhanced intrinsic motivation both directly and through feelings of competence and self-determination.

The mastery versus performance or ego-involved distinction can be extended to research on self-esteem. Waschull and Kernis (1996) suggested that self-esteem can be characterized by its day-to-day variability. High variability implies that self-esteem is closely related to and affected by current events, while low variability implies some disconnection or insulation of self-esteem from daily events. This variable might be associated with differences in motivational orientation. Those who are ego-involved in daily tasks, or performance oriented and thus vulnerable to fluctuations in feedback, likely take an extrinsic orientation toward many activities and thus would be likely to behave in less intrinsically oriented fashion than those with stable self-esteem (Deci & Ryan, 1992; Ryan & Deci, 1989). Waschull and Kernis (1996) found that those with unstable self-esteem tended to prefer easy tasks over more challenging ones (see Boggiano, Ruble, & Pittman, 1982; Pittman, Emery, & Boggiano, 1982) and were more concerned with external evaluations such as grades and pleasing the teacher. Jenkins (1996) reported an interesting finding consistent with these results. She found that women with a self-defining personality style, as opposed to those with a socially defined identity, were more likely to show autonomy in personal relationships and to take more social-system initiatives.

Increasing Intrinsic Motivation   Most of the early research on intrinsic and extrinsic motivational orientations involved examination of the conditions under which intrinsic motivation was undermined, or changed to an extrinsic orientation.[4] Having become experts at ruining intrinsic motivation, more recently investigators have turned to the problem of creating or enhancing intrinsic motivational orientations.

One area where motivational orientations has been shown to be important is represented in Amabile's work on

creativity (Amabile, 1983a, 1983b; Amabile & Hennesey, 1992). External constraints have been shown to reduce artistic creativity through external evaluation (Amabile, 1979) and competition (Amabile, 1982), and motivational orientation has been shown to underly creativity in creative writers (Amabile, 1985). Conti, Amabile, and Pollak (1995) have recently presented a technique for enhancing a creative, intrinsic orientation toward new learning. Participants were given a pretreatment that either consisted of a creative pretask related to the learning topic, or an equivalent-in-content noncreative version of the same pretask. Participants then engaged with the main learning task under one of three conditions: task focus (an emphasis on why the task is interesting), test focus (an emphasis on test performance), or a mix of task and test focus. The results indicated that overall those who were given the creative pretask showed greater long-term retention of the material. In addition, creativity with the new material was enhanced by the creative pretask, but only in the context of a task focus.

One line of research with obviously important applied implications has been targeted on the behavior of teachers. In several studies, it has been shown that teachers who are constrained in ways likely to reduce their own intrinsic motivation to teach behave in more controlling ways and in turn are less effective in teaching their students (Flink, Boggiano, & Barrett, 1990; Garbarino, 1975). It has also been shown that students find learning more enjoyable when their teachers use autonomy-enhancing as opposed to controlling teaching styles (Grolnick & Ryan, 1987; Ryan & Grolnick, 1986). Wild, Enzle, and Hawkins (1992) tested an intriguing hypothesis, namely, that the mere perception of the teacher as externally motivated might be enough to produce differences in student motivation, without any actual differences in teacher behavior. In a setting in which teachers were giving piano lessons, the students were led to believe either that the teacher was being paid for the session or was an unpaid volunteer (the teacher was blind to this manipulation). The results indicated that students who believed their teacher was a volunteer reported more interest in and enjoyment of the lesson. In a free play period, students who had believed their teacher to be a volunteer were significantly more likely to try new tunes rather than simply repeat what they had been taught. This latter result is consistent with other findings indicating that externally motivated participants are less likely to chose relatively challenging activities than are those who are intrinsically motivated (Pittman, Emery, & Boggiano, 1982). These results point to the students' perception of the teacher's motivation as an important but previously neglected variable. If the teacher is perceived to be intrinsically motivated, the students are more likely to be intrinsically motivated as well.

Perhaps the most obvious way to increase the likelihood of taking an intrinsic motivational orientation toward an activity is to give or add to the activity properties conducive to the satisfaction of the motivational underpinnings of intrinsic motivation. Adding the elements of mental stimulation, arousal and satisfaction of curiosity, and experiences of effectance and control should all facilitate attempts to enhance intrinsic motivation toward an activity. Lepper and his colleagues (Lepper & Cordova, 1992; Lepper & Malone, 1987; Malone & Lepper, 1987; Parker & Lepper, 1992) have studied these aspects of intrinsic motivation. Malone and Lepper (1987) identified four components of intrinsic motivation: challenge, control, curiosity, and fantasy.

Lepper and Cordova (1992) and Parker and Lepper (1992) studied the effects of the addition of fantasy to learning tasks (cf. Fein, 1981; Singer, 1977). Lepper and Malone (1987) observed that in order for the addition of fantasy to increase effective motivational involvement with a learning task the engagement in fantasy must be compatible with the learning objectives. If it is not, increasing interest in a distracting manner could actually interfere with learning. Parker and Lepper (1992) examined the effects of adding several different types of learning-compatible fantasy to the task of learning a basic computer-programming language. In their first study, they found that the addition of fantasy elements significantly increased interest in the activity, and in their second study they found striking evidence of increased performance on both immediate and delayed tests of learning and retention (see Lepper & Cordova, 1992, for similar findings).

Motivational Orientations and Interpersonal Interactions   The intrinsic versus extrinsic motivational orientation analysis has also been applied to approaches to interpersonal interactions. An interaction with another person can be approached as an end in itself or as a means to an end. There are several studies in the literature consistent with this viewpoint. Garbarino (1975) found that tutors who were paid treated their students in a more demanding and critical way than did unpaid tutors. Seligman, Fazio, and Zanna (1980) emphasized either intrinsic or extrinsic characteristics of interpersonal relations for heterosexual couples; they found that less love was reported by partners when extrinsic compared to intrinsic aspects had been made salient. Rempel, Holmes, and Zanna (1985) also found a positive relationship in couples between the extent to which the partner is trusted and the partner's perceived degree of intrinsic motivation for the relationship. Kunda and Schwartz (1983) found lower reported feelings of moral obligation for helping another on the part of participants who previously had been paid for engaging in a moral act compared to those who had not been paid.

The research on activities such as games and puzzles suggests a number of predictions that can be made for effects within interpersonal interactions. Pittman, Boggiano,

and Main (1992) reviewed several studies more explicitly targeted on the effects of shifts in motivational orientation on the nature of interpersonal interactions. For example, in one set of conditions Pittman (1982) demonstrated the overjustification effect in a context in which college students were either paid or not paid for talking with each other. In a free choice period, students who had been paid were less likely to converse with their former partners than were students who had not initially been paid. Similarly, in the third experiment of the Boggiano and Main (1986) report, when the activity of playing with another child was presented last in an "if you do this, then you can do that" series of activities, interest in playing with the other child was enhanced compared to the condition in which playing with the other child was the first activity.

Extending this analysis to what is known about the development of person perception, Pittman and Dool (1985) predicted that six-year-olds would react favorably to another child offering a bribe (a cookie) for playing with him or her because at that age children see friends and playmates in terms of external characteristics. However, nine-year-olds were expected to show an overjustification effect to the same offer, because they have more adult-like conceptions of friendship in which bribes or external inducements are seen as incompatible with intrinsic motivation. As expected, nine-year-olds reacted to the offer of a cookie by showing decreased interest in continued interaction with the peer, while six-year-olds showed no such decrease in interest.

Clark and Mills (1979, 1993) have made a distinction between types of relationships based on the norms for exchange of benefits that characterize the relationship. In *exchange relationships* (such as business transactions), benefits are exchanged within a norm of equity in which the expectation is that benefits will be returned in kind, or paid back, and that the ledger of benefits given and received will be kept in a balanced state. In contrast, in *communal relationships* (such as friendships or romantic partnerships) benefits are given in response to the other person's perceived need, and no repayment is expected nor is an explicit accounting of who has received what maintained.

The initial research on communal and exchange relationships has yielded results consistent with this analysis. For example, when participants desire or have a communal relationship, they are less happy with immediate repayment of a favor (Clark & Mills, 1979) less likely to keep track of who has contributed what (Clark, 1984; Clark, Mills, & Corcoran, 1989), and more likely to attend to the other person's needs (Clark, Mills, & Powell, 1986; Clark, Mills, & Corcoran, 1989) than are participants who either desire or have an exchange relationship. Participants desiring a communal relationship also react with more favorable affect to an opportunity or a requirement to help (Williamson & Clark, 1992) and with more negative affect to

their own refusal to help (Williamson, Clark, Pegalis, & Behan, 1996).

These differences in preferences for and reactions to the exchange of benefits can be seen in the light of the research on intrinsic and extrinsic motivational orientations. For example, if one desires a communal relationship, one presumably hopes that both partners will be focused on the relationship as an end in itself and not as a means to an end. Given this desire, benefit exchange that has the character of tit-for-tat would be undesirable because it both signals and actually promotes an extrinsic motivational orientation in which the relationship seems to or does exist as a means to an end. In other words, at least one function of following communal norms is to prevent the occurrence of overjustification effects, avoiding the shift to an extrinsic orientation that would lead to an exchange relationship.

Some of the findings reviewed earlier are consistent with this view of communal exchange norms as acting at least in part as devices for maintaining intrinsic motivational orientations. The relation in couples between the salience of intrinsic concerns and reported love (Seligman et al., 1980) and between trust and perceived intrinsic orientation (Rempel et al., 1985) suggests a link between such norms and intrinsic orientations. In the Pittman and Dool (1985) study, older children reacted to payment for interpersonal interaction with the overjustification effect, i.e., they were less interested in continued interaction in a free choice period. By adopting a norm that obfuscates the relation between exchange of benefits and the reasons for being in the relationship, such losses in intrinsic motivational orientation can be avoided. This analysis raises the more general question of what knowledge or meta-theories people have about the existence of differences in motivational orientations, and to what extent they have developed tactics to promote and maintain desired motivational orientations.

There is some evidence that these differences in motivational orientation and in reactions to benefits given and received are governed by more general cultural norms. For example, Miller and Bersoff (1994) found that reactions to helping under various instigating conditions differed strongly between countries having generally individualistic versus duty-based moral codes (United States versus India). The nature of intrinsic and extrinsic motivational orientations, and the conditions under which either is promoted or weakened, may also be sensitive to cultural practices and norms.

Motivational Arousal, Effort Expenditure, and Task Persistence

People do not always engage or attempt to engage in the behaviors available to them. Understanding what determines when behavior will and will not occur, and how much energy will be expended if behavior does occur, are

fundamental motivational questions. The research on intrinsic and extrinsic motivational orientations points to several determinants of the likelihood of engaging in actions when the person has a "free choice," and highlighting the differences between the two kinds of motivational orientations also points to differences in the vigor with which activities will be approached, and the nature of those approaches.

Expectancy X Value Analyses Another very widely used analysis for understanding when overt behavior will occur is the expectancy-value approach. In this view, the likelihood of behaving and the amount of motivation aroused is thought to be a multiplicative function of the current value placed on behavioral outcomes, and expectations regarding the likelihood of actually obtaining those outcomes (for recent reviews, see Kuhl, 1986; Feather, 1990). Analyses of this general type have been widely applied, but perhaps are best known in the work on achievement motivation (e.g., Atkinson & Feather, 1966; Atkinson & Raynor, 1974; Weiner, 1986).

Although a general review of this voluminous literature is beyond the scope of this chapter, some interesting interconnections between expectancy-value analyses and the intrinsic-extrinsic motivational orientation analysis, and, in particular, two developments related to expectancy-value theory are addressed in the next two sections.

One implication of the intrinsic-extrinsic motivational orientation research is that the expectancy-value equation for the same activity will be very different depending on the motivational orientation taken. For example, the important potential behavioral outcomes in the expectancy-value equation would be those inherent task qualities most closely related to the goals of mastery (such as challenge and entertainment) when an intrinsic orientation is taken. But a switch to an extrinsic orientation shifts the person's focus to value instead the outcomes contingent on engagement in the activity rather than characteristics of the activity itself.

Energization Theory One recent development related to the general expectancy-value approach is energization theory (cf. Wright & Brehm, 1989). Brehm and Self (1989) have directed our attention to the importance of task difficulty in determining actual motivational arousal. They proposed making a distinction between potential motivation and actual motivational arousal. In their analysis, potential motivation is determined by the variables traditionally included in expectancy-value analyses, but actual motivational arousal, designed to energize the desired behavior, is a function of the perceived difficulty of the task. If the task is seen to require little effort, then little actual motivational arousal will be seen. In this view, a general principle of energy conservation serves to govern the arousal of motiva-

tion so that actual motivational arousal does not exceed the minimum amount of arousal required to perform the desired behavior. If the task calls for behaviors of low difficulty, very little actual motivational arousal is needed, even when the behavioral outcomes are highly desirable. However, if the task is seen as impossible, then Brehm and Self argue that motivational arousal will drop to zero no matter how desirable the outcomes.

In a series of investigations, these predictions about motivational arousal and perceived difficulty have been confirmed using measures of cardiovascular arousal showing that task difficulty and actual arousal are indeed coordinated (e.g., Wright, Brehm, & Bushman, 1988). The energization analysis also predicts that goal attractiveness should be a function of the amount of actual motivational arousal. Because motivational arousal is a function of task difficulty, increasing task difficulty should correspond to increasing goal attractiveness (up to the point at which difficulty begins to exceed the person's ability or willingness to perform the behavior). These predictions have also received empirical support (e.g., Brehm, Wright, Solomon, Silka, & Greenberg, 1983).

There may be a number of interesting intersections between the energization analysis and the intrinsic-extrinsic distinction. For example, the energy minimization assumption may be particularly relevant to extrinsic motivational orientations, where an expedient approach, looking for the path of least resistance to the goal, is characteristic. It may be less relevant to activities in which the person becomes absorbed in the flow (cf. Csikzenmihalyi, 1990) of the activity and where involvement with challenge or entertainment may lead to energy mobilization beyond what might be thought of as minimally adequate. On a related dimension, the optimal level of desired task difficulty tends to be quite different depending on motivational orientation, with intrinsic orientations likely to elicit interest in tasks of greater difficulty than those preferred when an extrinsic orientation is taken. Study of the conditions under which enhanced pleasure in energy mobilization, and changes in preferred levels of challenge, could be related to the energization model may provide one approach to integrating intrinsic-extrinsic and expectancy-value analyses.

Self-efficacy Theory One determinant of perceived task difficulty is the person's belief in her or his own abilities in the relevant behavioral domain. Bandura (1977, 1986) has argued that personal beliefs about self-efficacy (one's belief in one's ability to exercise control over events) are crucial determinants of action. Other elements of the expectancy-value equation being equal, self-efficacy beliefs can determine whether one is willing to act, and with what energy and persistence such actions will be characterized. These beliefs about one's ability to control or exercise mastery over events have been shown to be crucial media-

tors in a large number of empirical investigations (see Bandura, 1986).

In relation to energization theory, self-efficacy beliefs are clearly relevant to the assessment of personal task difficulty, and one would therefore expect an earlier down-turn in energy expenditure in those with lower self-efficacy beliefs (see Brehm & Self, 1989, for a review of research confirming this prediction). These control-related beliefs are also relevant to the work on task persistence and helplessness (see below). One interesting finding from the intrinsic-extrinsic motivation research relevant to self-efficacy beliefs is the finding that a focus on evaluating one's level of self-efficacy can in itself be an instigation for changing motivational orientation from intrinsic to extrinsic.

Task Persistence: Mastery Orientation and Learned Helplessness   The likelihood of behavioral persistence versus quitting or giving up in a task setting has been the focus of a great deal of research. Learned helplessness theory (Seligman, 1975; Abramson, Seligman, & Teasdale, 1978; Abramson, Metalsky, & Alloy, 1989) has inspired a large number of studies in which lack of control leads to effort withdrawal. The current learned helplessness analysis proposes an attributional mediator, so that the way in which the inability to exert control is explained is the key to subsequent decreases in motivational arousal. Recent research from a social-developmental perspective provides some insight into the conditions that lead to a helpless or a motivated state.

In her research with children, Dweck and her colleagues have found clear individual differences in response to challenge and failure, patterns of "helpless" and "mastery" orientations, of giving up versus persistence, and improving versus declining performance (Diener & Dweck, 1978; Dweck, 1975; Dweck & Leggett, 1988; Dweck & Reppucci, 1973). Elliot and Dweck (1988) proposed that the goals that individual children pursue tend to lead to these differences in performance and persistence. They distinguished between performance goals, where the salient task goal is to evaluate one's own performance in the hope of maintaining or enhancing ability evaluations, and learning goals, where the salient task goal is to increase one's ability or learn new skills. In the former case, the focus on evaluating ability could make one vulnerable to inferences of lack of ability following failure, while a learning goal orientation should lead one to take failure as information that would allow one to learn how to do better the next time. In this scenario, people with performance goals would be likely to infer lack of ability and give up, while people with learning goals would be likely to persist. The findings reported by Elliot and Dweck, consistent with earlier findings, were in line with this analysis. In older children, these differences in orientation appear to be associated with differences in the children's theories of intelligence. Cain and Dweck (1995) found that third- and fifth-grade children who showed the helpless reaction to failure also held the belief that intelligence is fixed, while those children who showed the mastery response to failure tended to see intelligence as something that could change with effort. As a precursor to these beliefs about intelligence, first-grade children did not show these differences in implicit theories of intelligence, but those who showed the helpless pattern gave explanations in terms of outcomes, while those who showed the mastery pattern gave explanations oriented toward learning processes.

Several other investigators have reported data consistent with this general sort of analysis (Ames, 1984; Nicholls, 1984). Butler (1992), for example, using a similar performance versus learning goal analysis, found differences in the preferred kinds of social comparisons: children given performance goals showed greater interest in comparisons related to ability assessment, while children given mastery goals showed more interest in comparisons relevant to learning about the task.

A similar mastery versus performance analysis has been studied in the intrinsic-extrinsic motivational orientations literature. In that literature, although participants generally succeed rather than fail, mastery goals promoting a task focus tended to lead to enhanced or maintained intrinsic motivation, but performance goals tended to interfere with intrinsic motivation (Boggiano & Ruble, 1978; Elliot & Harackiewicz, 1994). Putting the research on intrinsic-extrinsic motivational orientations and the work on learned helplessness together, Boggiano et al. (1992) proposed a diathesis-stress model of the development of a helpless behavioral style. They proposed that children who typically take an extrinsic orientation toward school tasks, in which performance and ability evaluation is a central concern, are particularly likely to quit and withdraw effort in the face of evaluative or controlling instructional techniques. In other words, the conditions that generally lead to a shift to an extrinsic orientation may in children who are already predisposed to take an extrinsic orientation lead to the performance and emotional decreases seen in the learned helplessness literature (Boggiano & Barrett, 1985).

Considering the Links between Cognition and Action
When it comes to action, and the impetus for action, the role of cognition becomes problematic. Some of the theorizing on the determinants of behavior assumes that cognition precedes action, essentially a rational analysis. The expectancy-value set of theories implies, for example, that calculations are made of the relative attractiveness of potential outcomes and the likelihood of achieving those outcomes, and then behavioral decisions are made accordingly. While these calculations may not always be made consciously or with a great deal of intentional deliberation, they may often be made in just that fashion. In contrast, the

influential paper by Nisbett and Wilson (1977; see also Bem, 1967, for a position on the epiphenomenal status of cognition) showed that people sometimes have absolutely no idea why they have behaved in a particular way. There are extensive literatures on automaticity in its various forms (see Wegner & Bargh, 1998, in this *Handbook*) and on perception without awareness (cf. Bornstein & Pittman, 1992), both illustrating that action is not always the result of conscious or rational decisions. There are, therefore, ample illustrations of occasions when behavior control can occur without conscious access to its determinants.

One way of coming to a resolution on how to view cognition and behavior is to accept that sometimes conscious decision making, or at least decisions based on information available to conscious scrutiny either before or after behavior, does occur and does account for our actions. But at other times, the determinants of behavior are essentially unavailable to conscious scrutiny. The task then is to treat the extent and nature of cognitive control as a variable, and this view has been represented in several theoretical analyses.

The distinction made by Duval and Wicklund (1972) between objective and subjective self-awareness has the flavor of such an approach. When a person is objectively self-aware, the self is an object of conscious analysis and evaluation, and behavior is compared to the person's standards. In this state, behavior is more likely to be influenced by considerations about one's attitudes, values, and beliefs, and behavioral choices should be affected most clearly by conscious analysis. When a person is subjectively self-aware, the focus is on what is happening outside and the self is not taken as an object. It would seem more likely that the person would follow inclinations, whims, and gut feelings in this state and might therefore be less able (or inclined) to think and talk about reasons for behavior. Csikzenmihalyi's (1975, 1990) analysis of the experience of flow, of complete absorption in the ongoing feel of a current task or experience, might be thought of as a strong example of subjective self-awareness, as is Zimbardo's (1970) analysis of deindividuation, or Langer's (1989) of mindlessness. More recently, McClelland, Koestner, and Weinberger (1989) have made a distinction between implicit and explicit (or self-attributed) motivation. Implicit motives are those that find expression directly in behavior, particularly over the long term, without the person necessarily having conscious access to them. These motives are revealed only indirectly, through methods such as projective techniques (McClelland, 1980). Explicit or self-attributed motives are those that are accessible to the person, particularly for current specific behaviors, and can be measured through techniques that amount to direct questioning. Woike (1995) found, for example, that implicit motives are most closely related to the affective experiences that are most memorable. Explicit motives, however, were most closely related to the routine self-relevant experiences that are most likely to be remembered. Understanding more about the connections between cognition and overt action is clearly on the agenda for future research.

COMING TO TERMS WITH SELF AND THE END OF SELF

Motivation in Theories of the Self

One extremely important and characteristic feature of human development is the emergence of a sense of self. As a person comes to realize that he or she exists separately from the rest of reality, the desire to achieve a sense of personal coherence and strength becomes a major theme and aspect of life. Recognizing that this is a crucial part of human nature, it is not surprising that the self has taken center stage in many recent theoretical analyses of human motivation. The way the self develops, the way it is shaped and maintained, how it copes with threats and personal disasters, how it grows, and how it influences and is influenced by our actions and emotions are issues that have been addressed in the research generated by these theories.

Research on the self is reviewed extensively by Baumeister (1998, in this *Handbook*). But because motivation does appear prominently in research on the self, a brief review is included here to show how basic motivational analyses and issues have been or might be integrated into theories of the self. This very selective discussion is focused on five theories of self-functioning: self-assessment theory (Trope, 1986b), self-verification theory (Swann, 1983), self-discrepancy theory (Higgins, 1989), self-evaluation maintenance theory (Tesser, 1988), and self-affirmation theory (Steele, 1988). All these theories assume that the maintenance or enhancement of self-esteem is a fundamental motive, but they differ in the other motives that are given central consideration and their domains of applicability are disparate as well. For the purpose of this brief discussion, these analyses are considered in the context of the main categories of organization of this chapter (the construction of understanding, and acting on and in the world). Interestingly, most of the work inspired by these theories has to do with the maintenance of self-conceptions and, therefore, is related to the previously reviewed work on accuracy and illusions in the construction of understanding.

The Construction of Understanding: Accuracy and Illusion

The research reviewed previously shows that the motive for cognitive control can often lead to enhanced accuracy concerns, causing a shift to more effortful and careful information processing designed to produce accurate conceptualizations of new situations. However, at times cognitive control concerns can also lead to motivated illusions and distortions. The work on cognitive consistency has fo-

cused primarily on illusion and distortion, in the form of rationalizations designed to reduce or eliminate cognitive dissonance. Among the theories of self considered here, illusion, avoidance, distortion, and reassurance are clearly the dominant themes. Only Trope's (1986b) analysis of self-enhancement and self-assessment is explicitly oriented toward gaining an accurate conception of one's self.

Accuracy   Gaining veridical information about oneself, about capabilities, areas of weakness, likes, and dislikes, would seem to be required in order to function effectively and to make wise decisions. Acquiring such information requires that one gain diagnostic information about the self. Learning about one's areas of competence, for example, requires tasks that are capable of giving diagnostic information. The commonly noted preference for tasks of intermediate complexity presumably reflects avoidance of unreasonably easy or difficult tasks because they are not informative about competence, i.e., success on too easy a task or failure on too difficult a task implies little about one's ability. Trope (1986b) therefore argues that diagnostic tasks should be preferred when people are interested in learning about their capabilities, when they wish to make a self-assessment. Such diagnostic assessments come, however, with the potential cost of learning that one has less than a desirable level of competence at a particular activity, so the long-term goal of accurate self-knowledge may come at the cost of short-term discomfort.

This analysis of the nature of accurate self-assessment clearly connects to the research reviewed earlier on the motivation to come to accurate conceptualizations. A variety of motivational instigations, primarily creating concerns about cognitive control, have been shown to elicit more careful and accurate processing of incoming information. Similarly, it would be expected that information indicating some deficiency in understanding of self might increase the desire for diagnostic information. Swann, Stephenson, and Pittman (1981) found that control-deprived persons showed increased interest in obtaining diagnostic information about an interaction partner, and it might also be expected that such motivational instigations would enhance interest in gaining diagnostic information about the self. Although such a program of research has not been done, one could imagine a series of investigations designed to see if the kinds of motivational enhancements of accuracy motivation demonstrated when the target of understanding is a situation or another person would produce similar effects on interest in self-diagnostic information.

However, Trope also assumed that self-enhancement (maintaining and enhancing a positive view of self) was a general underlying motive, and recognized that to some extent the concerns with self-enhancement and self-assessment are naturally at odds. He argued that the tradeoff was of the form of potential short-term cost in self-esteem for long-term gain in self-knowledge. The motivational question yet to be addressed comprehensively is when the person will be more concerned with assessment or enhancement.

Illusion   Most of the research on motivation and the self has focused on illusion or illusion-related effects. The motive for cognitive consistency has featured prominently in these models. Self-verification theory adopts the general idea of mental construction of reality, that people strive to construct coherent and stable world views. Once such views are well-established, there may be a strong desire to maintain those views, and to defend or protect them from disconfirmation. Self-verification theory (Swann, 1983, 1987, 1990) parallels in the realm of the self the findings of cognitive dissonance research. The theory assumes that persons are motivated to verify their self-conceptions, and the research on self-verification has shown that inconsistent information or evaluations will be ignored, rejected, distorted, or avoided if possible. Most interestingly, self-verification theory makes this prediction regardless of the valence of the self-concept that has been embraced, so that negative self-conceptions will elicit the desire to ignore, reject, distort, and avoid *positive* information about the self. The motivation to have a positive self-conception is thus pitted against consistency motivation. Swann, Stein-Seroussi, and Geisler (1992) argue that information that implies one's conception of self is erroneous constitutes a fundamental threat to a sense of cognitive control because failing to understand one's self implies a very basic misconception of reality (if I do not understand myself, do I really understand anything?). The theory thus includes the assumption that cognitive control underlies the self-consistency motive. Some of the research generated by self-verification theory has explicitly pitted consistency and control motivation against self-esteem motivation. In two studies Swann et al. (1992) found an apparent priority for cognitive control through consistency over the desire for self-enhancement. Recently Swann and his colleagues (DeLaRonde & Swann, 1993; Swann, Griffin, Predmore & Gaines, 1987; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990) have suggested a two-step enhancement-verification process in which self-enhancing reactions are seen to be affective and relatively automatic, while self-verification processes are primarily cognitive and require processing time and effort, so that the addition of a cognitive load interferes with self-enhancement. However, when sufficient time and resources are available, self-verification appears to override self-enhancement concerns when the two are in conflict (Swann & Schroeder, 1995).

One interesting difference between the self-verification research and much of the cognitive dissonance research is that self-verification inconsistencies are typically not between cognitions and behaviors, but rather between cognitions and other cognitions. When confronted with an

inconsistency between a self-concept and incoming information, participants in the self-verification experiments work to bring new information into line with old information. With reference to the dissonance versus new look controversy reviewed earlier, this research seems to suggest most clearly that dissonance-reduction processes can be fully activated without the introduction of any aversive consequences other than inconsistency itself.

Self-discrepancy theory (Higgins, 1987, 1989) also features inconsistency as a fundamental principle. In this case, the theoretically relevant source of inconsistency is deviation from a self-standard, either one's own or another's ideal or ought self. One unique aspect of self-discrepancy theory is that it predicts different kinds of negative affective reactions to discrepancy depending upon the particular self-guide involved in the inconsistency. Failure to resolve an inconsistency, a form of lack of cognitive control, leads to specific negative emotional reactions that depend on whether the discrepancy involves the absence of positive outcomes (dejection-related emotions) or the presence of negative outcomes (agitation-related emotions). The entire pattern of self-guide discrepancies can be used to make specific predictions about the psychological meaning of and emotional reactions to particular self-discrepancies (Higgins, Vookles, & Tykocinski, 1992). In contrast with the emphases of other self-theories, self-discrepancy theory emphasizes the action-oriented or self-regulatory functions of the various self-guides.

Whether and to what extent discrepancies lead to negative emotions is predicted to depend on the extent to which the particular discrepancy is cognitively accessible. This prediction also relates to findings from the recent cognitive dissonance literature. Just as it appears that a major tactic for dealing with attitude-behavior inconsistency is by ignoring such discrepancies, so too it seems that the potential negative effects of self-discrepancies may be avoided primarily by ignoring the discrepancy. That is, by showing in the reported research that these emotional reactions are provoked by "activating" discrepancy (through priming, reminding, making salient), the research on self-discrepancy also suggests that these emotions probably are typically avoided by ignoring the discrepancies that do exist. This raises interesting questions about how one might actually go about making a discrepancy *inaccessible*. This argument is similar to the Duval and Wicklund (1972) assertion that the state of objective self-awareness is typically unpleasant (because self-focus usually reveals ways in which the self does not come up to some standard) and therefore is avoided precisely because it is likely that self-discrepancy will be activated. In self-awareness terms, the way to avoid objective self-awareness is by adopting an outward focus, becoming engaged in external tasks and events so that self-awareness is subjective.

Self-esteem has been the central focus of several recent theories of self. Self-evaluation maintenance (SEM) theory (Tesser, 1986, 1988) posits the motive to maintain a positive self-evaluation as its central assumption. SEM theory is unique in its focus on social comparison processes as a means of maintaining self-esteem. By analyzing whether a comparison other is closely associated with self, the quality of the other's performance, and the importance of the dimension of performance to self, SEM theory can be used to make predictions about whether social comparisons will be characterized by comparison (comparing one's own performance with that of another) or reflection (identifying with the performance of another). The theory predicts that comparison processes will be biased so as to maintain positive self-esteem.

Self-affirmation theory (Steele, 1988), considered earlier as a proposed alternative to cognitive dissonance theory, suggests that positive aspects of self can be used to blunt or obviate the need to confront directly events or information that imply something less than the desired level of adaptive and moral adequacy of self. Steele argues that threats to self based on experiences that suggest less cognitive control or cognitive consistency than desired (but see the earlier discussion of self-affirmation theory for issues concerning consistency) can either be dealt with on a dimension connected to the specific source of concern, as in cognitive dissonance (Steele & Liu, 1983) or control motivation research (Liu & Steele, 1986), or alternatively by simply reaffirming some valued aspect of self. The assumption is that self-affirmation is typically higher in the hierarchy of motive importance than either cognitive consistency or cognitive control motivation, so that satisfaction about the adaptive and moral adequacy of self at any level, while again perhaps not particularly rational ("I'm OK here, so I'll ignore those problems over there") should relieve the need to do any further work.

There have been a number of attempts to pit these various self-motives (assessment, consistency and control, and esteem maintenance or enhancement) against each other, either to establish whether they are indeed important aspects of self-functioning, to find some order of precedence or connection among the various motives, or to determine the circumstances under which a particular motive is likely to be important. For example, Sedikides (1993) found evidence for the predominance of self-enhancement, some evidence for self-verification, and little or no evidence for a desire for self-assessment in one set of studies. However, the recent research suggests that indeed all these motives are important at times, so that the task is to understand when a particular motive will be active. In addition to Swann's work on self-verification and self-enhancement reviewed above, Jussim, Yen, and Aiello (1995) found evidence that affective reactions are dominated by self-enhancement concerns, that attributions and perceptions of feedback accuracy are most related to self-consistency, and

that expectations and self-evaluations are affected both by consistency and accuracy concerns. Dunning (1995) found that self-enhancement concerns predominated when task feedback was related to an ability described as unchangeable, while self-assessment concerns predominated when ability was described as malleable (see the previous review of Dweck's work for related findings). Tesser and Cornell (1991) found that SEM, self-affirmation, and cognitive dissonance are all possibly connected to the same underlying motive (affect or arousal is their suggested candidate). Taylor, Neter, and Wayment (1995) added self-improvement to the list of self-motives (along with self-assessment, self-enhancement, and self-verification) and argued that what may activate all four motives is a situation of past threat or failure, or anticipation of some important future threat or challenge. Further work on when particular self-motives will be ascendant can be expected in the near future.

Action While the main focus of these theories of motivation and the self has been on the construction and maintenance of the cognitive construction of self, and associated emotional reactions to inconsistencies and discrepancies, some of this research clearly implicates these emotions in action choices. For example, Swann et al. (1992) suggest that people will choose their interaction partners, or more generally construct their environments, so that self-verifying information is much more likely than self-inconsistent information. Similarly, the self-evaluation maintenance model suggests that particular kinds of interaction partners will be chosen based on the person's desires for social comparison of a particular kind. Self-discrepancy theory views the self as a guide for action in the pursuit of valued goals. All these theories suggest that individuals will at times be likely to seek out or avoid certain kinds of information and environmental settings, but the specific nature of those seeking and avoiding behaviors would depend on the specific self-motive that had been activated. There is still room for much more work on the action implications of these sources of self-motivation.

Self-preservation and Mortality: Terror Management Theory

There is another development that characterizes human existence. Along with a young person's immersion in the joys and setbacks of life, constructing larger world views and achieving new behavioral competencies, finding and keeping an understanding of self, comes some extremely bad news—life ends. This fact, perhaps uniquely clear to human beings, by its inevitability and apparently inexorable negation of all of life's projects, is an aspect of reality that must be addressed in some way.

The issue of mortality suggests an examination of the more general and fundamental motive to survive, presum-

ably a rather basic source of motivation. In their recent summary of terror management theory, Pyszczynski, Greenberg, and Solomon (in press; see also Solomon, Greenberg, & Pyszczynski, 1991) argue that because survival is the basic, or "master" motive, knowledge of the inevitability of mortality has to be kept at bay. They proposed that the survival motive and the knowledge of mortality lead to (among other things) symbolic defensive behaviors, in the form of embracing a shared cultural world view that suggests a sense of symbolic if not literal immortality (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992), and experiencing positive self-esteem, i.e., a sense of personal value (Greenberg et al., 1992). These symbolic defenses are thought to provide a buffer against the otherwise terror-evoking fact of mortality.

In support of these proposals, two sets of data have been reported. In support of the proposed *anxiety-buffering function* of self-esteem, several studies show that increases in self-esteem lead to decreases in anxiety caused by death-related stimuli and decreases in defensive responses to reminders of mortality. In support of the *mortality salience hypothesis* (that as the salience of mortality increases, so does the need for symbolic structures that provide protection against death-related anxiety), participants who are reminded of their mortality show a variety of positive reactions to and assumptions about those who confirm their world views, and correspondingly negative reactions to those who challenge or violate those views (see Pyszczynski, Greenberg, & Solomon, in press, for a review of the empirical research).

The proposal that self-esteem serves an anxiety-buffering function is compatible with self-affirmation theory (Steele, 1988), in which self-esteem is also seen as a reassurance against a variety of threats, and with self-evaluation maintenance theory (Tesser, 1988), in which the maintenance of self-esteem is seen as a motive in itself. It would seem to be at odds with the motives of accuracy and self-assessment (Trope, 1986b) and self-verification (Swann, 1983) theories, in which negative information about the self may be sought, and with self-discrepancy theory, which specifies a different set of affective reactions depending on the particular nature of the self-discrepancy. However, if terror management is only one function of self-esteem, and particularly if concerns with control are seen as aspects of a survival motive, then terror management theory gives us one more example of the need for discovering the circumstances under which a particular self-motive will be most (and least) influential.

CONCLUSION

Consistent with the recent emphasis on cognition, much of the recent motivational research has been focused on how

motivation affects cognition, both to promote accuracy and to create illusion. Less effort has been devoted to how motivation affects action and emotion, and these links will presumably be the subject of more intense scrutiny in the near future. The separate investigations of cognition, motivation, and emotion that have recently characterized research approaches may have matured sufficiently for theorists to consider new attempts at developing more fully integrated conceptualizations of reactions to external stimuli, inner psychological experience, and overt behavior.

As research on motivation continues, there will surely be motives in addition to the ones featured in this chapter. For example, motives for self-improvement or growth have been suggested as targets for research (Taylor et al., 1995; Pyszczynski et al., in press). A need to belong, or a social motive, has also been suggested recently (Stevens & Fiske, 1995; Baumeister, in press; Baumeister & Leary, 1995; Pittman, in press) as a fundamental source of human motivation (see Batson, 1998, in this *Handbook*, for related discussions of altruism). Whether these additional motives will turn out to have heuristic value for new research ideas remains to be seen, but putting them forward does raise some larger issues. These proposals, the disagreements about the role and nature of self-esteem, the work reviewed earlier that attempted to pit the various self theories against one another, and the work on basic motives related to accuracy and illusion and to overt action raise more general issues about the relative hierarchical status of the various motives that have been proposed. Perhaps it will be profitable to view all the various motives as stemming from a few most basic sources of desire, or perhaps such reduction will prove to be unprofitable. But consideration of these larger issues may presage a new movement away from small, highly constrained analyses in favor of a return to more sweeping attempts to understand human nature.

NOTES

1. One can focus on how an understanding of a specific event or situation is constructed, or move to higher levels of generality that might include overall world views (cf., Wegner & Vallacher, 1986). Unless specified, the general "understanding" language is meant to encompass the whole range of explanations.

2. Although Cooper & Fazio still call their position cognitive dissonance theory, clearly it is something entirely different from conventional cognitive dissonance theory, though focused on the same data base. The term "new look" is therefore used here.

3. These analyses might also be referred to as secondary rather than primary theories of motivation, but since the term secondary may carry some evaluative connotation I did not wish to convey, I use the term pan-motivational to indicate the nonspecific nature of the motivational inputs to these models.

4. One exception to this emphasis on undermining intrinsic motivation is the research on the effects of verbal rewards, or praise. From the earliest studies of the undermining effects of reward (Deci, 1971), it was clear that verbal rewards tend to enhance intrinsic interest, presumably because they directly support and encourage feelings of competence or mastery (Anderson, Manoogian, & Reznick, 1976; Deci, 1972; Swann & Pittman, 1977). However, even verbal rewards can reduce intrinsic motivation when delivered in a controlling manner in a controlling context (Pittman, Davey, Alafat, Wetherill, & Kramer, 1980).

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